

Translated from the Russian by V. MOROZOV

Soviet Agriculture

В. Морозов
СОВЕТСКОЕ СЕЛЬСКОЕ ХОЗЯЙСТВО
На современном этапе

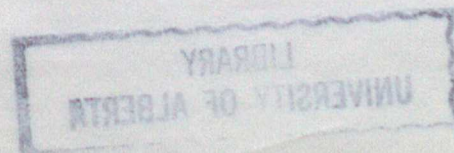
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Translated from the Russian by *Inna Medova*

В. Морозов
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На английском языке

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summarised the country's economic achievements during the period 1971-1975 and defined the guidelines for its further progress towards communism. Its principal reports, the views expressed in the interventions, and the decisions of the Congress contained many references to agriculture, this key sector of the Soviet economy.

The production of food will always constitute a vital sphere of application of human labour. For the world as a whole its agricultural population continues to be mankind's most numerous layer. No matter how important today's transformations in the economy and in science and technology may be, land will continue to constitute the basis of all wealth. It is, therefore, natural that today all

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countries view the development of agriculture as one of their most vital economic and political problems, no matter where they are located or what social system governs their lives. A sharp deterioration of the world's food problem occurred in the early 1970s. In 1972 there was a decline in the world's production of food for the first time since the end of the Second World War. This was followed by a sharp reduction in the world's grain reserves. Between 1970 and 1972 the world's grain reserves (less the USSR)

The first half of the 1970s will enter into human history as a period of fundamental changes in the socio-economic situation of many of the world's countries as well as in their relations with each other. Capitalist countries have entered one of the most intense and far-reaching economic crises in their history. In spite of difficulties, the majority of newly liberated countries have carried out important progressive measures in liquidating feudal oppression and in consolidating their sovereignty. Socialist countries have firmly continued to develop their economies and have successfully pursued their struggle for consolidating peace on our planet. The CPSU's 25th Congress, held from February 24 to March 5, 1976 in Moscow, summarised the country's economic achievements during the period 1971-1975 and defined the guidelines for its further progress towards communism. Its principal reports, the views expressed in the interventions, and the decisions of the Congress contained many references to agriculture, this key sector of the Soviet economy.

The production of food will always constitute a vital sphere of application of human labour. For the world as a whole its agricultural population continues to be mankind's most numerous layer. No matter how important today's transformations in the economy and in science and technology may be, land will continue to constitute the basis of all wealth. It is, therefore, natural that today all

countries view the development of agriculture as one of their most vital economic and political problems, no matter where they are located or what social system governs their lives.

A sharp deterioration of the world's food problem, particularly in the economically less developed countries, occurred in the early 1970s. In 1972 there was a decline in the world's production of food for the first time since the end of the Second World War. This was followed by a sharp reduction in the world's grain reserves. Between 1970 and 1975 the world's grain reserves (less the USSR and the People's Republic of China) declined by 60 per cent. Their ratio to the world's grain consumption was 23 per cent in 1970, 19 per cent in 1972, and only 11 per cent (estimate) in 1975. Between 1970 and 1974 world food prices had nearly trebled. Following some decline in the first half of 1975 the price level again showed an upward tendency and subsequently systematically fluctuated with a tendency to rise. A major cause of that deterioration in the food problem was a decline of average food production per capita in several of the world's densely populated regions.

In 1974 the level of food production per capita was lower in 46 developing countries than it was in the early 1960s, and in 18 of these countries it declined by more than 15 per cent. Altogether these 46 countries contain over 43 per cent of the Third World's population. In a number of regions of Asia and Africa there were numerous outbreaks of mass famine, in which tens of thousands and even hundreds of thousands of persons lost their lives. The countries that have suffered most from the deteriorating world food situation include Bangladesh, Cameroun, the Central African Empire, Benin, Guyana, Honduras, India, the Republic of Guinea, Kenya, Laos, Pakistan, the countries of the Sahel zone of Africa (Upper Volta, Mali, Mauritania, Niger, Senegal, Chad, and others), Somalia, Sudan, Tanzania, and others—more than 30 countries altogether.

Undoubtedly, the so-called demographic explosion or jump in population growth has played a major role in the deterioration of the developing countries' food problem. Indeed, their population has grown rapidly over the past 10-15 years. But it should also be noted that in many ways the growth in those countries' birth rates and declines in their death rates were made possible by increases in food production during that period, as well as by changes in diet (the gradual shift away from tubers and roots to grain). The fact that demand for food has grown more rapidly than its output is also caused by an increased rate of urbanisation (a growth in the share of the urban population), and a transition from the natural economy to monetised exchange in many of the Third World's countries.

The output of grain in developing countries has increased by approximately 75 per cent since the Second World War. This is largely attributable to increases in land under cultivation (about 35 per cent) as well as increases in the yield of wheat and rice through the use of new strains. At one time the introduction of high-yield strains of wheat and rice in developing countries was advertised as a "green revolution". But while it would be wrong to play down the significance of modern strains, they cannot produce the required effect without water, fertilisers, equipment, and trained personnel. That, in turn, requires appropriate social conditions, such as overcoming the backwardness of the peasantry and the parcelling of land holdings, increases in the marketable share of output, and overcoming the power of big landowners.

"No credits, no land reclamation, no 'aid' to the peasant, none of the measures of 'assistance' beloved of the bureaucrats and liberals," wrote Lenin, "will yield results of any importance so long as there remains the yoke of the feudal latifundia, traditions, and systems of economy."¹

¹ V. I. Lenin, *Collected Works*, Vol. 15, p. 89.

The shift to new cereal crops was largely concentrated in Mexico and in Asia. In Asia (outside socialist countries) the new strains of wheat covered only one-third of wheat-producing land in 1972-1973, while the new varieties of rice covered one-fifth of the rice-growing areas. In India, which is one of the "green revolution's" principal countries—the yield of wheat fluctuates around 12 centners per hectare after ten years of using the new varieties. This is also true of a number of other countries. The experience of growing the new strains over a period of years has shown that the "green revolution" may not be carried out over large areas of cultivated land without appropriate capital investments. For example, Indian economists have calculated that expenditures on fertilisers were increased nearly 17 times per unit of land in the province of Cuttack when traditional strains were replaced by high-yield strains, and that in the province of Krishna the corresponding figure was 13 times.

Developing countries currently possess one-half of the world's arable land. But only 17 per cent of the world's agricultural scientists work in those countries which account for only 11 per cent of the world's expenditures on agricultural research.

The imperialist policies of individual states, and especially of the United States, have also played an important role in aggravating the world's food problem. In the United States the exportation of food became an instrument of diplomacy immediately after the Second World War. Officials of that country admit that in those years "American food was a leading factor in bringing Italy into the Western orbit". Later a programme entitled "Food for Peace" came to be employed in the service of narrow political objectives. It was precisely in the early 1970s, in fact, that the United States sharply reduced its grain deliveries under that programme to areas of the world experiencing famine. Its programme of so-called food aid in those years was primarily channelled to South Vietnam, Cambodia,

and Chile, as well as some of the countries in the Middle East, that is, to countries within which the United States was pursuing its own political interests, rather than to countries suffering from drought and from floods. The United States openly proclaimed, moreover, the slogan "food in return for petroleum", not shrinking from a "policy of starvation" in seeking to renew its expansion in developing countries.

At the UN World Food Conference, which met in Rome in November 1974, representatives of India, Ghana, Cameroun, and Algeria, as well as of other countries, strongly underscored the historical responsibility of imperialist powers, former metropolises and international corporations for the current backwardness of Third World countries and for the underdeveloped state of their agriculture. In their addresses to the conference many of the delegations of developing countries rejected attempts of imperialist states to blame the world's food crisis on petroleum-producing countries.

Apart from favouring a fundamental restructuring of the existing system of international economic relations the conference also called for the carrying out of agricultural reforms within the developing countries. In such a context much attention was given to the Soviet delegates' statements that it is in the area of socio-economic processes that the principal causes of the deterioration in the world's food problem should be sought. The Soviet Union's experience in transforming its own agriculture and in subsequently developing it on a modern basis is finding a growing recognition throughout the world.

The disintegration of imperialism's colonial system and the subsequent development of newly emancipated countries has induced millions of the former colonies' peasants to participate actively in their countries' social life. At the same time these processes have helped the peasantry in becoming fully aware of the exploitative nature of the capitalist road of development. In countries with backward

and small-scale farms whose weight in their economies is rather high, the setting up of modern production is a very complicated matter.

A number of factors are raising serious obstacles to the rapid development of these countries' own agriculture. These include the absence of local sources for the very large capital investments that are needed; the influence of feudal and even clan and tribal relations; the continuing expansion of imperialism in ever more refined forms; and increasing competitive pressures of industrial capitalist countries on the world market for means of agricultural production (machines, equipment, fertilisers). At the same time the food problem is aggravated each year by the growing need for food. In a number of developing countries the need to set up their own highly developed agricultural production has jeopardised their independence, moreover, it has even become a matter of life and death.

What is the solution? How does one find the proper path? How can small-scale farming households resting on heavy manual labour be transformed into large-scale modern production units? How can one put an end to starvation, endless poverty and social injustice? These are the problems that are now confronting farmers in most countries of the Third World.

Essentially similar problems confronted Russian farmers towards the turn of the century. It is true, of course, that since then the world has changed, and that current conditions differ in many respects. In a number of cases contemporary progress in science and technology and the industrialisation of the economies of developing countries have substantially changed the demands as regards agriculture, and also define the social problems in the countryside in a new way.

Yet nothing emerges by itself, nor are there any miracles, even in our space age. Each new task calls for modest beginnings, for the construction of foundations, and the

learning of fundamentals. In such a context the study of the experience of other peoples, who have passed through similar situations, can be of invaluable assistance and may suggest correct solutions to many of the problems that exist today. Marxism-Leninism have always opposed dogmatic approaches and the belief that there are "eternal" practical forms for carrying out its ideals.

Socialism has withstood the test of time. In all countries forward-looking people view it as the force that leads the world's progress. It is because it continuously takes changes in economic and social conditions into account that socialism was able to acquire such an historical role, and it is the fact that Communists understand the meaning and direction of social development that provides them with a decisive advantage. In the words of Lenin the ultimate and sole criterion of communist doctrine is "its conformity to the actual process of social and economic development".¹ It is this that helps the socialist system to always find correct solutions to new problems.

How did Russia's agriculture look before the Great October Socialist Revolution? At that time over 85 per cent of the population lived in villages. As communal agriculture disintegrated, farming households continually grew smaller, since land was divided among family members. There were as many as 20 million peasant households. At the same time a social differentiation was rapidly taking place in the villages. Kulaks (village capitalists who exploited the poorest peasants) were rapidly gaining in strength. Thirty thousand estate owners owned almost as much land as did ten million peasant households. An equal amount of land was owned by kulaks and other capitalist elements. Thirty per cent of the farming households had no horses, while 34 per cent did not own any equipment. Peasants tilled the land with such primitive instruments as wooden ploughs. Steel ploughs were seldom seen. A farmer's house-

¹ V. I. Lenin, *Collected Works*, Vol. 1, p. 298.

hold was fully self-sufficient. Agricultural produce was largely sold by kulaks and owners of estates. Poorly tilled lands yielded meagre crops. Frequent droughts brought ruin to small farmers in the first place. Aside from causing their impoverishment, the extremely difficult conditions in which Russian peasants were placed contributed to their death rate.

The sixty years that have elapsed since the October Revolution represent only a short period in terms of historical time, particularly if one recalls that twenty of these years were taken up by wars that were imposed on the Soviet people and by years of post-war economic rehabilitation. Yet, in spite of this, the changes that have occurred in agricultural production and in village life have been so fundamental that they could not have been carried out at such a rate by any other social structure.

Above all, Soviet agriculture is a system that is characterised by large socialist agricultural enterprises, whose two principal forms are collective and state farms. Altogether there were 29 thousand collective farms, 18.1 thousand state farms, and 6.3 thousand inter-collective farm associations in 1976. Besides, there were hundreds of large-scale animal farming complexes relying on industrial methods, agro-industrial enterprises and associations, and 900 research centres, institutes, and experimental stations. The land in use in the USSR currently exceeds 604 million hectares. Of this area Soviet farmers cultivate 226 million hectares each year, collect hay on nearly 43 million hectares, and place about 330 million hectares under pasture. On January 1, 1976 there were 111 million head of cattle, including 41.9 million cows, as well as 57.9 million pigs, 147.1 million sheep and goats, and nearly 735 million head of poultry. Farms and fields provide three-quarters of the people's consumption and account for approximately one-third of its national income.

The agricultural gross output is 3.2 times larger than before the Revolution. Since then the productivity of one

hour of labour has grown over sevenfold. If one compares data for 1909-1913 and 1971-1975, the output of grain increased from 72.5 million tons to 181.6 million tons, i.e., by 2.5 times, while that of raw cotton increased from 0.7 million tons to 7.7 million tons, i.e., 11 times. During the same period the output of sugar-beet grew by 7.5 times, of meat (slaughter weight) by 2.8 times, and of potatoes by 3 times.

Each year Soviet agriculture's technical and material infrastructure continues to improve. In early 1976 the average enterprise (including both collective and state farms) possessed about 50 tractors, 22.3 tractor-drawn cultivators, 14.4 grain-harvesting combines, and 29.6 lorries, representing over 97 thousand hp. At the present time the principal types of field operations on collective farms and state farms (ploughing, the seeding of grain crops, cotton, and sugar-beet, and the harvesting of grain crops and of other crops that are stored in silos) are fully mechanised, while the mechanisation of such operations as the planting of potatoes, the tilling of sugar-beet, of maize and cotton, and the cleaning of grain as well as change over to combines to harvest maize are nearing completion. On collective and state farms 83 per cent of the cows are milked by milking machines; 81 per cent of the cattle and 95 per cent of the pigs are supplied with water delivered by mechanical means; 89 per cent of the sheep are shorn by electric machines.

In tsarist Russia farmers were generally unaware of the existence of mineral fertilisers. Even in 1940 only 3.7 kg of mineral fertilisers (in units of fully effective components) were used per hectare of land under cultivation. In 1975 that figure had risen to 76.7 kg per hectare, i.e., by 20.7 times. At the present time about 74,000 million kilowatt-hours of electric energy, or nearly 15 times more than in 1940, are used in the USSR's agriculture. Today there are 8.9 million electrical motors on the country's collective and state farms.

Activities directed at improving the quality of land have been one of the major factors that have contributed to the stability of agricultural development. Today they encompass nearly every region. Both land-draining and land-irrigation activities are taking place on collective and state farms from the Baltic Sea to the Pacific Ocean. By 1976, 28.1 million hectares of land had been improved. Between 1971 and 1975, 4.5 million hectares were irrigated and 4.4 million of swampy and excessively humid lands were drained. Today 25 per cent of all crops are produced on irrigated lands.

Between 1966 and 1970 the monetary resources assigned to land improvement were two times larger than over the preceding 20 years. Between 1971 and 1975 this category of investments more than doubled once again.

The state is consolidating the technical and material infrastructure of collective and state farms by continually increasing investments into both agriculture and other closely related sectors. Between 1918 and 1975 the total volume of such investments was 320,000 million rubles. While they were only 145 million rubles during the first decade of Soviet power, they rose to 131,000 million rubles between 1971 and 1975, i.e., by more than 90 times (in terms of comparable prices). This illustrates the creative capacities of socialism, which have been the decisive factor in Soviet agricultural development.

In pre-revolutionary Russia more than three-quarters of village residents were illiterate. Today the Soviet rural population is fully literate, and the number of persons completing secondary and higher education is increasing. There were 52 persons possessing a higher and secondary education for each 1,000 rural residents in 1939. Today that figure is 347. Before the Revolution the number of agricultural specialists, specialists in zoology, and veterinarians working in agriculture was insignificant, and most of them were serving owners of large estates. In 1976 the number of specialists working in agriculture, who had

acquired a higher education or else a specialised secondary education, was over 1.2 million persons, of whom 887 thousand were specialists in agricultural professions. Some 92.5 per cent of collective farm chairmen and 98.1 per cent of state farm directors have a higher or specialised secondary education. This is also true of 96.5 per cent of the agricultural specialists working on collective farms and 94.4 per cent of those working on state farms, as well as of 94 per cent of the specialists in zoology working on collective farms and 90 per cent of those working on state farms.

Yet these historical achievements of Soviet agriculture do not imply that there no longer are any unsolved problems. Above all, agricultural output continues to depend very largely on weather conditions. Despite its substantial rate of growth, our agriculture is not yet able to meet the country's growing needs. Finally, even though the antithesis between town and country has been overcome, the essential differences between them remain, and to overcome them is one of the major tasks of socialism.

In his report to the Party's 25th Congress, the General Secretary of the Central Committee of the CPSU, L. I. Brezhnev, emphasised that with regard to agriculture "the Party sets two interrelated aims. The first is to secure a reliable supply of food and agricultural primary materials for the country and always to have adequate reserves for this. The second is to make steady progress in levelling up the material, cultural and everyday conditions of life in town and countryside, this being our programme requirement."¹

It is a commonplace truth that in modern agriculture natural (biological) processes interact with economic ones. As the level of social development rises, moreover, the role of economic factors (fertilisers, equipment, technology,

¹ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy*, 25th Congress of the CPSU, Moscow, 1976, p. 58.

and scientific achievements) becomes greater. It is through them that man influences the spontaneous operation of biological factors such as climate, the weather, and the fertility of land. In analysing the state of agriculture in particular countries, accordingly, one should neglect neither their natural and climatic conditions nor the specific economic possibilities that they possess at particular stages of their development.

The natural and climatic conditions of agriculture are both severe and unstable in the USSR. No other major country faces such serious problems in overcoming their negative influence on agricultural production. In particular, agroclimatologists estimate that on the average these conditions are 2-2.5 times worse than in the USA. The years during which Nature has been kind to the Russian farmer may be literally counted on one's fingers. Each harvest passes through a weather test as it were.

Since economic possibilities for increasing the productivity of fields and farms artificially are closely dependent on the specific social arrangements that characterise each particular country, social factors, too, play an important role in agricultural development. It is not surprising that agriculture has always been given much attention in the ideological struggle between socialism and capitalism. And in that connection opponents of the socialist way of life often rely on the most unseemly methods. In particular, they seek to discredit our agriculture's socio-economic foundations by referring to difficulties that frequently result from the severe natural conditions and from spontaneous weather fluctuations. Yet these conditions cannot be chosen at will, and socio-economic factors can, therefore, only reduce their influence or else amplify them.

In recent years bourgeois propaganda has made much of bad harvest years in the USSR, particularly in 1972 and 1975. It seeks to show that Soviet agriculture is experiencing some kind of "disintegration" or even the "collapse" of state and collective farms. While it is true that the

results of those years are far from what one would desire, and that they, naturally, hamper the development of the Soviet economy, it is difficult to attribute them to the Soviet approach to agricultural development. In 1973 and 1974, however, when there were exceptionally good results in the production of basic agricultural products, they were attributed to lucky weather conditions.

In recent years alone the USSR has experienced severe droughts in 1963, 1965, 1967, 1972, and 1975. Generally, over 60 per cent of the country's territory is periodically subjected to droughts and other unfavourable weather influences. At the same time that zone normally accounts for approximately 75 per cent of grain deliveries. The year 1972 was a particularly difficult one. First a snowless winter destroyed the crops of 12 million hectares of sown land. Then drought affected more than 100 million hectares of arable land. This is, of course, a very large area, which is almost twice the size of France. The drought, especially in the Volga area, exceeded that of 1921, when several hundreds of thousands of people died of starvation and disease. In 1975, however, the drought was even more severe. In fact, Soviet farmers had never yet experienced such unfavourable conditions. More generally, the frequency of droughts between 1963 and 1975 is matched only by that of the 1890s, when Russia was literally shaken by a series of harvest failures.

Without going further into the history of Russian droughts let us consider more closely those years that have already been mentioned. The country's average yield per hectare of land was 8.3 centners in 1963, 9.5 centners in 1965, 12.1 centners in 1967, 14 centners in 1972, and 13.8 centners in 1975. The gross grain harvests in the corresponding years were 107.5 million tons, 121.1 million, 147.9 million, 168.2 million, and 140 million tons respectively. No matter how biased they may be, critics of Soviet agriculture will not be able to ignore these figures. In a sense, difficult years were a kind of test for our social system's

foundations. They show that the Soviet path of agricultural development and the agrarian policy of Communists, which serves the needs of a comprehensive consolidation of collective and state farms, have been bearing fruit. In the USSR the socio-economic conditions governing the development of agriculture are gradually reducing its dependence on spontaneous fluctuations in the weather as well as the harshness of working conditions on the land.

As for years in which weather conditions were more favourable, such as 1973, 1974 and 1976, there, too, were other factors that contributed to good harvests. While weather conditions were, unquestionably, better than in 1972, it cannot be said that they were exceptionally favourable, as some of the bourgeois press asserted. In fact, in Siberia, in the Ural region, and in a number of other regions weather conditions in 1973 were harsh. Almost everywhere in the country harvesting took place under unceasing rain. Nor was the weather kind to farmers in many of the country's principal agricultural regions in 1974. During the spring there were storms in the Stavropol Territory, while in the Volga area crops were damaged through sharp changes in temperature and excessive humidity. Difficult weather conditions were experienced in the Ukraine and in a number of Siberian districts. Similarly 1971 was worse than 1970.

In spite of these difficulties, historians will record the early 1970s as a period of fundamental improvement in the USSR's agricultural development. A record harvest of grain (222.5 million tons) and of raw cotton (7.7 million tons) was gathered in 1973, together with good harvests of sunflower, sugar-beet, potatoes, and vegetables. The output of milk and of eggs exceeded earlier levels. While the next harvest (in 1974) was more modest, it still was the second best in the country's history, as 195.6 million tons of grain were collected, as well as 8.4 million tons of raw cotton, i.e., more than in 1973. The output of rice also reached a record level—1.9 million tons. Between 1971

and 1975 gross output increased by 13 per cent as compared to the preceding five-year period.

All this does not imply that the harmful influences of weather have now been overcome. Much remains to be done before agricultural development can be made fully dependable and before the yield of basic agricultural products and their gross output can be stabilised. At the present time the volume of monetary resources and of the material means that the Communist Party and the Soviet Government are channelling to an expansion of irrigation activities and the draining of land, the mechanisation of production, and the production of mineral fertilisers and other artificial means for increasing soil fertility are larger than ever before. A wider utilisation of the country's general economic potential in meeting agriculture's needs serves as the basis of current agrarian policy. In his report to the Party's 25th Congress, CC CPSU General Secretary L. I. Brezhnev has stressed that "the Party regards the further development of agriculture as a key task of the state and the people. All branches of the economy must make a worthy contribution to its fulfilment."¹

The current principal aim of the Soviet people with regard to agriculture is to achieve stable rates of growth in basic agricultural products. Increases in the rate of agricultural development are required by the country's growing population, a continually growing share of urban residents, and unprecedented improvements in the people's material welfare. In terms of the general caloric content of a person's diet (the number of calories consumed by a person each day) the Soviet Union has already attained the level of the world's most advanced countries. As the level of welfare rises, however, important changes take place in that diet's composition. Consumers are increasing their demand for high-quality products that are rich in

¹ L. I. Brezhnev, *Report of the CPSU Central Committee and the Immediate Tasks of the Party in Home and Foreign Policy, 25th Congress of the CPSU*, p. 64.

proteins and vitamins. It is in this respect that the output of collective and state farms is still not meeting fully the country's needs for agricultural produce. Consumption rates of such major food products as meat, vegetables, and fruits are still below the corresponding scientifically established norms. Similarly the requirements for the agricultural raw materials of several food-processing sectors of the economy as well as sectors of light industry are also not fully met.

In the economic competition with capitalism the USSR's agriculture has achieved important successes. Its average output has grown from 55 per cent of the United States agricultural output in 1949-1953 to over 70 per cent in 1956-1960, approximately 75 per cent in 1961-1965, and about 85 per cent today. Its average yearly rate of growth between 1951 and 1974 was 3.8 per cent, while this was only 1.6 per cent in the USA. In terms of agricultural output per capita, however, it has not yet reached the level of the USA, and the USSR's role on world agricultural markets is relatively weaker. Speaking in Alma Ata on September 3, 1976, CC CPSU General Secretary L. I. Brezhnev observed that despite unfavourable weather in 1975 "a normal rhythm of the country's development and normal conditions of life" were assured in the Soviet Union.

In recent years, particularly when droughts caused very large losses, the Soviet Union purchased appreciable quantities of grain on the world market. This was undertaken with only one aim in mind, namely, to avoid a decline in the population's standard of living. This creates a need to accelerate the country's agricultural development.

Finally, Soviet agriculture faces still another task, namely, that of fully overcoming socio-economic differences between town and country. Man, indeed, does not live by bread alone. While there has been immense progress in Soviet rural communities since the October Revolution, the historical task of bringing town and country closer together in Russian conditions is so many-sided and so complex that

it cannot be said to have been fully solved. In particular, socio-economic differences continue to exist in the following areas. First, in the unequal level of development of industry and agriculture. Second, in the presence of two types of property (state property and the property of co-operatives) and in those particular class differences between workers and collective farmers that follow from this fact. Third, in the level of culture and the quality of everyday life of the urban and rural populations.

These socio-economic differences are largely attributable to an insufficient level of development of productive forces in agriculture. Accordingly, they cannot be overcome over a short period of time. It is, therefore, natural that the Communist Party of the Soviet Union has adopted a complex approach to that problem that envisages solving simultaneously both the tasks of increasing agricultural output and ensuring its stable development, on the one hand, and those of a more rapid social development of contemporary rural communities, on the other. The Party bases such a policy on the view that the construction of communism cannot proceed successfully without a qualitative transformation of social relations, changes in the nature of labour, and a levelling out of unequal conditions in the cities and rural communities as regards cultural life and daily existence.

2. THE SUBSTANCE OF THE SOVIET APPROACH TO AGRICULTURAL DEVELOPMENT

Briefly, the substance of the Soviet approach to agricultural development lies in a socialist reorganisation of semi-natural small peasant production into modern social large-scale commodity production of the industrial type. The Soviet approach to the solution of the peasant and agrarian problem is inseparably linked with the overall building of socialism and communism. This defines the

final objective of the entire process as well as the means for achieving it. It is based on an identification of the leading economic, managerial, social, and political approaches to a socialist transformation of agriculture and the countryside. But in order to better understand the nature and specific features of the Soviet approach to agricultural development, it is necessary to recall, if only in brief outline, the particular socio-economic situation in which the process of an historical resolution of the agrarian question in Russia was initiated. It is already difficult to recall today that slightly more than 100 years ago the Russian peasant was a serf, i.e., that his life was under the full control of landowners, landed nobility, and of the tsar's family. The peasantry was then the most numerous as well as the most oppressed class. It was only in 1861 that serfdom was abolished in Russia and that the peasants were granted their so-called freedom by the tsar. In fact, however, that "freedom" was purely formal, since in an economic sense they continued to be fully dependent on their previous masters. The best farmlands and the richest pastures were given to the landowners. Beyond this, in return for their "freedom", the peasants also had to repay a large additional debt. In fact, the "freedom" granted by the tsar liberated the peasants from their means of livelihood rather than from their dependence on their masters. It is, therefore, not surprising that there were more peasant revolts in Russia during the first four months that followed the proclamation of the tsar's decree than there had been during the previous 30 years.

The history of capitalism knows of two basic approaches to agricultural development—the Prussian and the American one. The essence of the Prussian, or "Junker" approach (as the estates of the large German landowners were called), is a gradual consolidation of the large landowners' estates through robbing the wide masses of the peasantry. The class of landowners retains their large estates, their influence in the state increases, and the vestiges of

the mode of peasant exploitation that is associated with serfdom survive for a long time. The American method of agricultural development is relatively more progressive. It rests on the creation of individually owned farms under conditions that are relatively free of feudal vestiges. It also produces an intensive differentiation of agriculture and a harsh competition of farmers among themselves. Eventually both the Prussian and the American approach lead to the mass impoverishment and ruin of small and middle-sized farms.

Following the Reform of 1861, attempts were made to reorganise the feudal ownership of land both in the Prussian and the American way in tsarist Russia. These did not, however, resolve the peasant and agrarian question, since they neither freed the peasantry from oppression nor saved it from a growing impoverishment. Under the Prussian approach the poorest farmers would have become permanently indebted to landowners, while under the American approach they would have become indebted to the kulaks. The exploitative nature of both was fully evident, and both were openly rejected by Russian peasants.

After the Reform of 1861 had been carried out, which adopted, in effect, the Prussian approach to agricultural development, the tsarist autocracy became frightened by the peasant unrest that was directed at landowners. It undertook a new attempt to solve the agrarian question at the beginning of the 20th century—this time on the basis of the American approach. In 1906 the tsar published decrees that provided for the settling of peasants in individual farmsteads located at some distance from each other, and permitting them to mortgage their lands. The kulaks immediately took advantage of these new regulations and began to purchase the land holdings of the poorest peasants at low prices while converting the peasants themselves into hired working hands. This produced an intensive process of social stratification and disintegration of the peasantry as a social class. In carrying out its policy of encouraging

the kulak form of personal property over land, tsarism relied on inhuman measures that led to peasant revolts and unrest throughout the entire country.

While simple questions may be solved by simple methods, the solution of complex problems usually calls for time as well as considerable efforts. Progressive Russians were aware of the urgency of the situation that had developed in the villages, and a diversity of proposals were made for solving the peasant and agrarian question. They included both the programme of N. G. Chernyshevsky, who was a revolutionary democrat opposing the peasants buying out land, and the forced confiscation of peasant lands, and utopian illusions concerning the possibility of communal socialism, which drew their inspiration from patriarchal peasant communities.¹ The Marxist movement, which began to spread in Russia during the second half of the 19th century, sought a progressive solution to the peasant and agrarian question, and at the beginning of the 20th century a specific programme of action for resolving that problem in Russia was formulated by Lenin in a work entitled *The Agrarian Programme of Social-Democracy in the First Russian Revolution, 1905-1907*. This represented an important contribution to the solution of the peasant and agrarian question in Russia. It indicated that liberation of the peasantry from both tsarism and capitalism, which at that time was developing intensively, could only be achieved through an alliance

¹ The peasant community (*obshchina*) arose under the primitive communal formation, and nearly all peoples have known some form of peasant community. In Russia it continued to exist for a longer period of time than in other countries. The *obshchina* was characterised by a collective ownership of land, autonomy, a systematic reallocation of community lands, the use of lotteries to allot hay-making land, a joint responsibility of community members to the authorities, and mutual guarantee. Both landlords and kulaks made use of communal arrangements to subordinate the peasants to their own interests, while tsarism artificially prolonged their existence in order to collect taxes.

with the working class and revolutionary transformations to be carried out by the proletariat. The Communist Party insistently called on the peasantry not to follow any capitalist approach, and to follow a new one instead, which had not previously existed. This rested on elimination of the private ownership of land which served as the basis of serfdom and exploitation.

Having defined the fundamental principles underlying his agrarian programme (confiscation of lands belonging to landowners and to the tsar and their transfer to ownership by the whole people), Lenin and the Communist Party formulated a position concerning the subsequent utilisation of land in the light of currently existing conditions. Communists have never hidden the fact that under socialism both land and agriculture's basic means of production must, in principle, be utilised on the basis of social rather than of private property. "...When we are in possession of state power we shall not even think of forcibly expropriating the small peasants (regardless of whether with or without compensation), as we shall have to do in the case of the big landowners. Our task relative to the small peasant consists, in the first place, in effecting a transition of his private enterprise and private possession to co-operative ones, not forcibly but by dint of example and the proffer of social assistance for this purpose."¹

In April 1917 Lenin wrote that it is not sufficient to merely transfer land to the people, since land cannot be eaten, and many millions of households that do not possess horses, equipment, or seeds will not gain anything from such a transfer. "...It is necessary to *think* about going over to large-scale farming conducted on public lines and to *tackle this job at once* by teaching the masses, and in turn *learning from the masses*, the practical expedient measures for bringing about such a transition."²

¹ Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 3, Moscow, 1973, p. 470.

² V. I. Lenin, *Collected Works*, Vol. 24, p. 169.

But the Communist Party had always fully recognised that former peasants, who had always fought for more land as they did for more bread, whose entire life was associated with their land, for which they repeatedly shed blood, could not be expected to suddenly surrender it and merge it with the common fields. That will require both time and a very substantial organisational and educational effort. Peasants must first become convinced of the vital need for such a merging. Accordingly the Party did not press farmers to reorganise their lives in a fundamental way.

One of the earliest acts of the young Soviet state was the Decree on Land, which was adopted on the day that followed the October Revolution. It abolished immediately and without compensation the ownership of land by holders of large estates. A consolidated "Peasant Mandate on Land" was an important part of the decree. It was drawn up on the basis of 242 local peasant mandates that deputies had brought to the First All-Russia Congress of Peasants' Deputies. In particular, it declared land to be the common property of the people. It could be used by any citizen who wished to work it either by himself or together with others. But the use of hired labour was not permitted. Land tenure was declared to be equalitarian, i.e., land should be divided equally among those who till it.

Equalitarian land tenure was not a matter of principle in the Communists' agrarian programme. Yet it was necessary, in their view, that this demand set out in the peasant mandates be carried out. It was important that the peasants become convinced through their own experience that an excessive parcelling of land would overcome neither their poverty nor agriculture's overall backwardness. At the same time that measure undermined the interests of kulaks. In introducing equalitarian land tenure the state by its "Law on Land Socialisation" of February 19, 1918 served to aid the poor, who were the first to receive land. It also encouraged collective forms of land use and gave to the

Soviets, i.e., to the local organs of Soviet power, the right to redistribute the land and other facilities that had been owned by holders of large estates.

Thus, all of the peasants' demands were met. This was the first time in history that the agrarian problem was solved in favour of the peasants.

Following the adoption of the initial decrees and the implementation of the peasant mandates, Lenin and the Communist Party began to prepare and discuss a new agrarian programme. This was adopted in March 1919 following its endorsement by the people. It stressed two areas of activity, namely, the setting up of state farms, i.e., of large state-owned socialist enterprises, and a comprehensive support of various societies and associations engaged in joint land cultivation, agricultural communes, co-operatives, and artels. In order to increase the productivity of agricultural labour, state agencies directed their efforts to increase the efficiency of land cultivation, to carry out land reclamation, and to improve the supply of the farmers with seeds, fertilisers, livestock, and implements.

The basic objectives of the new programme were to increase the output of agricultural products, to gradually strengthen peasant agriculture, and to involve peasants into various types of co-operatives. It represented a long-range plan intended to introduce large numbers of farmers to socialism through the shortest and most accessible path. Having come to support the Communist Party when it was preparing and carrying out the Great October Socialist Revolution, and having adopted its programme of agrarian transformations, the Russian peasantry had, thus, entered on the Soviet path of agricultural development that the Communists had proposed.

The October Revolution had taken place, the peasants had now received their land, but the food problem remained. In fact, it became even more acute. The country was ruined by its prolonged participation in the world war.

A severe Civil War followed the Revolution, together with a military intervention by 14 capitalist states. The cities were experiencing starvation and the people did not have enough to eat. Industry and the transportation system had been almost fully destroyed. The total damage caused by the military intervention and Civil War was estimated at 39,000 million pre-war gold rubles. This represented approximately one-fourth of the country's pre-war national wealth.

In spite of that tragic situation, the Soviet state sought above all to alleviate the farmers' lives. Russian peasants received 150 million hectares of land as a result of the Revolution without any payment. The Revolution also freed them from yearly rental payments to the amount of some 700 million gold rubles, as well as from an additional 1,400 million gold rubles of mortgage payments to the Peasant Land Bank. For purposes of comparison let us note that in 1913 the total volume of agricultural output sold by all farmers was 4,500 million gold rubles. This serves to indicate the order of magnitude of the financial relief that the Russian farmer derived from the Revolution. No less important was his awareness of having been freed from the oppression of owners of large estates and of his own power to manage both local and country-wide activities through his representatives in the Soviets.

It is in this way that the greatest of all transformations of peasant villages was initiated. Nothing comparable had ever taken place in the past. This did not lead, however, to a period of peaceful development. The young Soviet state was forced to wage an extremely destructive Civil War and to repel the military intervention organised by the world bourgeoisie. Bleeding from many wounds the country was fighting for its survival. The execution of the agrarian programme that had been prepared in 1919 was suspended. The state introduced its policy of War Communism, in which everything was subordinated to the objective of survival and victory through proletarian discipline. The entire country was transformed into a military camp.

During the years of War Communism the country's agrarian policy was based on the following measures: 1) the introduction of a surplus appropriation system as the basis of a planned distribution of food to the population; 2) the organising of the agricultural proletariat through poor peasants' committees; 3) the encouragement of state farms and of communes; 4) a socialist reorganisation of the work of rural supply and marketing co-operatives.

The surplus appropriation system was in effect a war-time measure for creating stocks of food. Under this practice the government collected from peasant households at fixed prices all available grain and fodder above established norms (for sowing, personal consumption, and the feeding of livestock). The system was of a class nature and was aimed primarily against the kulaks. In spite of its proletarian severity, it was fair, and was accepted by the peasantry. In the extremely harsh conditions of the Civil War the peasant preferred the government's policy of surplus appropriation to being robbed by the white-guards (supporters of the tsar and of the bourgeoisie), the interventionists, and bandits.

In 1918, on Lenin's initiative, rural committees of poor peasants (*kombedy*) were created to help carry out the policy of War Communism in the countryside. Their tasks included the struggle for grain, applying the dictatorship of the proletariat in the villages, opposing acts of sabotage by the kulaks, providing assistance to special urban detachments of workers and soldiers in effecting the surplus appropriation system, struggling against speculators, and supplying food to the needy population. The *kombedy* played a very important role in bringing the agricultural proletariat together into a single organised force.

While stressing its policy of surplus appropriation and of organising the village poor, the Soviet government continued its efforts to strengthen social forms of agricultural production even during the harshest period of class struggle against counter-revolution. The *kombedy* and the

food detachments organised local communes and artels, divided and, whenever necessary, redivided among communes and artels the means of agricultural production and land that had been confiscated from owners of large estates. They also created teams of workers to sow and gather harvests. The Soviet government set prices, defined tax exemptions for communes and artels, and supplied them with industrial commodities at reduced prices.

During the years of War Communism, the Soviet government also devoted considerable efforts to the reorganisation of rural producer, supply, marketing, and consumer co-operatives. All of these forms of co-operation had already existed in tsarist times, and they were led by kulaks and their supporters. Together with the *kombedy* the food detachments began to expel the kulaks and to take the co-operatives under their own control. They sought to reorganise their operation in such a way that they would serve working peasants rather than the kulaks' counter-revolutionary objectives.

As a result of these measures, yearly volume of grain that was procured between 1918 and 1921 increased by more than 2.5 times and the government began to operate a centralised system for supplying food to 37.5 million persons. This saved the urban proletariat and the army, and hence the Revolution as well. The Civil War had been won. The heavy sacrifices that this victory had required had been borne by farmers as well. The problems that had been connected with the war were now replaced by others. The central problem now concerned the reconstruction of the national economy, and especially the establishment of normal economic relations with farmers. As a result of the Civil War, of the surplus appropriation system, and of the absence of industrial goods that could be exchanged for agricultural products, a situation developed that caused agricultural output to decline to one-half of its output in 1913.

On the initiative of Lenin the surplus appropriation system was abolished in 1921. Instead the farmers were required to pay a tax in kind that was cut by 50 per cent. Later in most cases this became a monetary tax. Free trade was permitted at domestic market prices. Measures were adopted to encourage the development of consumer and producer co-operatives, as well as co-operatives in small industries. Prices for industrial goods were reduced. These measures were called the New Economic Policy (NEP). Its basic objective was to strengthen the economic basis of the working class' alliance with the peasantry. The introduction of the tax in kind had stimulated the farmers' developmental activities, since they now knew beforehand what share of output had to be delivered to the government and what share could be sold on the free market.

Following the replacement of the surplus appropriation system by the tax in kind, the restoration of productive forces in the villages proceeded rapidly. Much importance was attached to co-operatives. There were approximately 3.5 million members of village consumer co-operatives by the end of 1924, as well as 3.5 million peasant households that were also members of agricultural co-operatives. The level of overall agricultural production was now 80 per cent of the 1913 level and the flow of commodities from the cities to the villages increased. Thus the alliance of workers with peasants had been strengthened.

Yet neither the initial measures of the Soviet government in confiscating large estates and redistributing them among peasantry nor the measures associated with the New Economic Policy had abolished the operation of objective economic laws. As expected, two very distinct tendencies began to develop in the course of time. On the one hand, the social forms of farming (state farms, communes, peasant associations, and so on) began to rapidly gain in strength, but at the same time those processes that produced a fragmentation and differentiation of individual peasant farms also reappeared.

Because of inadequate supplies of livestock and of means of production a situation developed in which the majority of small peasant households obtained low yields year after year, and became quasi-consumers, i.e., consumed nearly all that they produced. There also occurred a fragmentation of peasant households through their redistribution among family members. While there were 15-16 million farming households in the country before the October Revolution of 1917, there were 25 million of them by the mid-1920s even though the area of land in use was approximately the same. This produced a deterioration in the peasants' standard of living. In addition, the economic support and incentives that the peasantry had received as a direct consequence of the Revolution became less perceptible in the course of years. Both the share of their output that was produced for the market and their incomes declined. The truth of Lenin's words that "small-scale farming will not bring deliverance from want"¹ was continually being confirmed.

Many small farmers who had not yet recognised the advantages of social labour were forced to earn additional incomes from wealthier farmers and even to neglect their own lands, whose inefficiency had become evident. At the same time kulaks began to increase the size of their own lands through all kinds of devices, and as they became wealthier their ambitions increased once again. Their households, which were larger and more efficient, acquired a growing influence on the markets of commodity production. This represented, in short, a renewal of the very same process of differentiation within the villages that had already led the peasantry to the edge of catastrophe just before the Revolution. Of course, it was now occurring at a different time, as well as in an environment that held out no prospects of development for it. But one should not underestimate its negative

¹ V. I. Lenin, *Collected Works*, Vol. 30, p. 148.

influence, for small-scale households produce capitalism under any conditions spontaneously and on a large scale. By 1927 there were already 1.1 million kulak households.

Lenin often stressed the need for a transition to large-scale social production. But the most difficult part of such a policy was to find transitional forms of organising large-scale socialist farms that could be understood by the peasantry and that lay within their reach. While noting the great importance of the first state farms and communes as initial shoots of a new mode of production in agriculture, Lenin also warned that "the transition from small individual peasant farms to collective farming will take some time and can certainly not be accomplished at one stroke".¹

The first state and collective farms had been created shortly after the October Revolution. Between 1918 and 1919 the first few hundreds of state farms had been created on the basis of the nationalised large estates, and the first few thousands of collective associations of peasants appeared. By 1922 there were 11 thousand collective farms and 4,316 state farms. Lenin indicated that in the context of socialist development in the countryside state farms should serve as model enterprises, whose example would bring about a dissemination of rational methods of production. The role of state farms was to assist both individual farmers and the early co-operatives in recognising the advantages of large-scale social production. And state farms were, in fact, successful in playing such a role.

Lenin, however, always viewed co-operation as the road to joint production activities that is most accessible to farmers and one that they best understand in the socialist restructuring of the countryside. Shortly before his death (in 1924) he outlined the basic principles of co-operation among farmers and relevant forms and methods. Subse-

¹ V. I. Lenin, *Collected Works*, Vol. 28, p. 341.

quently these became known as Lenin's co-operative plan.

The execution of that plan represents the principal stage in the Soviet approach to agricultural development. With the alliance of the working class and the peasants and with the dictatorship of the proletariat producer co-operatives encompassing millions of rural population are the only means that can lead to victory of socialism in the countryside. The co-operative plan was based on the Communist Party's agrarian programme of 1919 mentioned earlier and on Lenin's latest works, which were devoted to the practice and perspectives of building socialism in the USSR. The Soviet path to socialism for peasants was succinctly expressed by Lenin in the following pattern:

"Methods of transition to socialist agriculture.

the small peasant

collective farm

electrification."¹

In his works Lenin returned repeatedly to an interpretation of that scheme. He stressed that it was easier to win the revolution than to accomplish the second and extremely difficult part of the revolution, namely, to build socialism in a peasant country. That required a restructuring of an economy that was based on individual small-scale commodity production into a large-scale collective farming equipped with modern technology and electricity. "Only when the country has been electrified, and industry, agriculture and transport have been placed on the technical basis of modern large-scale industry, only then shall we be fully victorious."²

To re-equip the village was the aim of industrialisation. But the organising of producer co-operatives in agriculture was no less difficult a task. Here again, Lenin was quite clear in defining major principles and forms of organisational activities in the countryside. A major

¹ V. I. Lenin, *Collected Works*, Vol. 32, p. 320.

² *Ibid.*, Vol. 31, p. 516.

principle of socialist co-operation is that forms of co-operation should develop gradually. Socialist co-operation should first be initiated in its simplest forms, namely, as co-operation in marketing, credit, and supply. It is in these areas that farmers must learn to jointly manage their affairs and to recognise the advantages of collective activities.

In the early 1920s agricultural co-operation in Russia was most developed in the form of credit associations. This also led to the emergence of special production and marketing co-operative systems which engaged in the joint supplying of individual branches of agriculture as well as in marketing. The corresponding co-operative centres supplied the villages with agricultural machines and mineral fertilisers and marketed nearly all specialised crops, as well as up to 30 per cent of the grain. It was through them that contracts for agricultural production were let out during the second half of the 1920s. This represents an even higher form of co-operation. The contracts were of a bilateral type. In return for commitments on the part of peasants to produce a specified volume of output to be delivered to government procuring organisations, they received both the necessary means of production and scientific and other assistance in improving farming methods. This type of contracting represented one of the first forms of productive ties between town and country. It served to prepare the way for the subsequent transition of villages to collectivisation.

The government also sought to help and assist the first producer co-operatives that had emerged in agriculture in a variety of ways. Initially these were communes in which all means of production as well as the personal farms of members were collectively owned. The daily needs of commune members were met entirely through the socially owned economy on the basis of an equality of rights. Such a form of co-operation proved to be unviable. Some of the communes were disbanded, while others were reorganised

into other types of social economies on the initiative of their own members.

Associations for the joint cultivation of land as well as village teams and other simple forms of co-operative production activities became widespread. Their forms varied considerably. Social production teams were often established on the basis of already existing joint enterprises and traditional associations. In Central Asia, for example, co-operatives were formed to share in the utilisation of irrigation ditches. Their members were jointly responsible for maintenance activities and for controlling water utilisation norms.

Such social production teams represented agricultural production associations of the simplest kind, within which only labour was shared, and for certain durations of time. Production equipment, as well as cattle and buildings, remained the property of the farmers themselves, and they were used collectively only during those times when this was required by the agricultural work. Gradually, however, elements of a social ownership of means of production appeared even in this form. A part of the revenue obtained by associations for the joint cultivation of land, for example, was retained for acquiring machines and for the construction of farm buildings.

In the 1920s agricultural artels represented one of the most important forms of co-operation with regard to production activities. The term "artel" implies an association of workers for purposes of joint labour in carrying out specific assignments either in production or in other areas. It is mainly based on contractual agreements. While in the case of agricultural artels labour, land, and the basic means of production (draught animals, machines, and certain agricultural buildings) were owned collectively, their members continued to own small auxiliary holdings together with personally owned beef and dairy cattle, buildings, small-scale production equipment, and so on. That form of co-operation turned out to be more viable under

the conditions existing in the USSR, and many of its features were subsequently used to organise collective farms.

Still another major principle of co-operative farming concerned the voluntary character of decisions to join or leave a co-operative. In this connection Lenin wrote: "While encouraging co-operatives of all kinds as well as agricultural communes of middle peasants, representatives of Soviet power must not allow the slightest coercion to be used in setting them up. Associations are only worth while when they have been set up by the peasants themselves, on their own initiative, and the benefits of them have been verified in practice."¹ Learning gradually from their own experience, and as a result of considerable organisational and educational activities on the part of Communists during those years, Russian peasants began to join producer co-operatives.

By the end of 1928 nearly 28 million persons were participating in various forms of co-operation. This number is 13 times larger than in 1913. In 1927 various types of co-operatives (marketing, supplying, credit, consumer and others) encompassed 32 per cent of the peasant households. This percentage was even higher in regions that produced industrial crops. It attained 90 per cent in dairy products and livestock-raising regions, and 95 per cent in tobacco-growing regions. The number of collective farms increased rapidly. While there were 12.6 thousand of them in 1923, uniting 143.7 thousand collective farmers, this number rose to 18.7 thousand by 1927, with 296.1 thousand collective farm workers.

The many years that were devoted to patient work with peasants had begun to produce results.

In 1927 a decision was taken by the Communist Party to accelerate the process of collectivisation of peasant households, and in 1929 peasants began to join collective farms on a large scale. Some 23.6 per cent of all peasant house-

¹ V. I. Lenin, *Collected Works*, Vol. 29, p. 218.

holds had joined collective farms by 1930, and this figure rose to 61.5 per cent in 1932 and 93 per cent in 1937. Thus, during the first ten years that followed the October Revolution peasants were preparing for collective farming within the simplest forms of co-operation, while subsequently another ten years were needed before the actual collectivisation of villages could be completed.

Perhaps no single event since the October Revolution has attracted as much world-wide attention as did the collectivisation of agriculture. While some study it with interest, and seek to find solutions to their own problems from its experience, others are clearly seeking to distort it and discredit it. Towards the end of the 1920s, having lost all hope that the young Soviet state would perish in the fire of the Civil War and intervention or as a result of the country's economic and political blockade, the enemies of socialism placed all their hopes for the restoration of the capitalist order in Russia on the kulaks. But this hope, too, soon crumbled following the mass organisation of collective farms, which brought defeat to the kulaks as the last remaining exploitative class. It is this that explains the hatred and slander that the collective farm system has aroused.

Even though it did represent a revolutionary measure, collectivisation did not take place as a sudden violent change, as is often depicted by enemies of the Soviet state. It has already been noted that its implementation had required more than 20 years. Because no guidance could be sought from the experience of other countries or earlier generations, mistakes were occasionally made. In particular, specific local conditions were often not taken sufficiently into account, while in a number of cases the principle of voluntary membership in collective farms was also violated. But the Party and the state discussed these mistakes openly and acted resolutely in correcting them. Suffice it to note that following a decision of central Party and government organisations those collective farms that

had been created artificially were dissolved in the early 1930s.

With regard to kulaks, however, the revolutionary measures that were taken were provoked by their attempts to undermine the collective farm movement from within. They opposed the organisation of collective farms, causing material losses, and organised armed collisions and acts of terror against collective farm activists. It was they who initiated hostile action. In 1927 there were 23.7 million peasant households, and only about one million kulak farms. Naturally, the socialist state sought to serve the interests of poor and middle peasants who were attracted to collective farm life, rather than those of the kulaks who exploited them and who created obstacles to the socialist development of villages.

As a consequence of mass collectivisation the kulaks ceased to exist as a social class. This does not mean, of course, as is often implied by capitalist propaganda, that this large number of persons was physically exterminated. It means that they lost their former economic and juridical possibilities for functioning in a society in a particular way, namely, through exploiting other social groups and classes. Their means of production and property, which had been acquired through exploitation, were confiscated. In addition, individual kulaks who were hostile to the collective farm system and who had committed major crimes, including the murder of activists, were isolated from society, convicted, and in a number of cases were deported. But most former kulaks were permitted to continue individual farming activities, and means were made available for their relocation in other regions of the country. The establishment of collective and state farms as socialist forms of the organisation of agriculture became a major prerequisite for the subsequent development of large-scale agricultural production. Since that time the Soviet path of agricultural development has withstood the test of history. In particular, collective and state farms

withstood with honour the severe tests that arose in 1941-1945, during the Great Patriotic War.

Even in villages that had been temporarily occupied by German fascists peasants often continued to decide on many issues jointly, as they had done before. In other cases, as during the defence of Leningrad, for example, farmers located on occupied territory secretly sent large amounts of food to that city's encircled and starving population.

The vast destruction that the German fascist invaders brought to the country's collective and state farms amounted to many thousand million rubles. More than 70 thousand villages were entirely or partially destroyed and burned. Approximately a hundred thousand collective and state farms were plundered, 137 thousand tractors and 49 thousand combines were stolen, more than 300 thousand structures for sheltering farm animals were destroyed, as well as 658 thousand hectares of orchards and vineyards. In addition, seven million horses, 17 million head of cattle, 20 million pigs, and 27 million sheep and goats were either slaughtered or transported to Germany. Besides the material damage, agriculture suffered a staggering loss of manpower, for most of 20 million Soviet war-dead had worked in agriculture.

Following the country's liberation from Hitler's armies, farmers applied their efforts to the reconstruction of collective and state farms. With the help of the government they succeeded in this difficult task. The vast war-time ravages to Soviet villages were repaired relatively quickly, and the pre-war level of agricultural production was attained five-seven years after the war's end. Subsequently agricultural production continued its advance along the path of economic and social progress. This expressed once more the advantages of large-scale socially organised economic activities and the strength of the socialist system.

Yet the replacement of a large number of small households by large-scale socialist enterprises did not mark

a termination of the Soviet path of agricultural development. A stage had now been reached at which large-scale socialist enterprises could be shifted to machine production, that is, a stage at which agriculture can be industrialised. As a general principle Lenin envisaged the need for such a stage from the very beginning. But until the end of the Second World War the state was unable to set aside a sufficient volume of resources to make an industrial development of agriculture possible. Meanwhile, the founders of scientific communism always stressed that "the task itself arises only when the material conditions for its solution already exist or are at least in the process of formation".¹ Actually, it is only after the reconstruction of the country's economy, following its destruction during the Second World War, that the agricultural development of the USSR entered a stage of comprehensive technical transformation.

In emphasising the decisive role of agriculture's material and technical infrastructure in its development, Lenin noted: "We know how to build up the foundations of communism in agriculture—this can be done at the cost of a tremendous technical evolution."² He also emphasised that this did not refer to a quantitative accumulation of technical means of production, but rather to a need "to effect an immense improvement in his [the peasant's—Ed.] whole farming technique, to reform it radically".³

Today Soviet agriculture is primarily characterised by qualitative transformations of all aspects of production, including its material and technical basis, technology, organisation of labour, and economic management. Of course, similar transformations are taking place in many countries, including the capitalist countries. In all cases they call

¹ Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 1, Moscow, 1973, p. 504.

² V. I. Lenin, *Collected Works*, Vol. 42, p. 260.

³ *Ibid.*, Vol. 30, p. 113.

for large investments, an accelerated development of industrial sectors that are closely related to agriculture, and an increase in the role of the state. Unlike that in capitalist countries, however, the industrialisation of agriculture in the USSR is above all being carried out on a different foundation, namely, on the basis of a network of large-scale agricultural enterprises that have already been established and are operating successfully. It is also being carried out according to planned programmes rather than spontaneously.

There was a time when both the objective pressures of the historical process in capitalist countries and the evolution of laws governing social development brought about a displacement of the Prussian approach to agricultural organisation by the American approach. The emergence and the rapid gains in strength of the new and still more progressive Soviet path of agricultural transformation under conditions of socialism, however, together with the sharply declining prestige of the legend concerning the presumed uniqueness and stability of the American approach, have made it possible for developing countries to convince themselves of the fundamental advantages of the socialist way.

What are concretely the advantages of a large-scale enterprise over a small-scale one? First, small-scale farms inevitably undergo a further fragmentation. Second, at the present time small-scale farms do not lend themselves to an efficient utilisation of the latest achievements of science and technology, without which they generally cannot survive as independent units. Third, small-scale production is much more vulnerable to the uncontrollable forces of nature, to which agriculture is continuously exposed. Fourth, particularly in capitalist countries, small-scale farms are not able to compete with larger enterprises and are, therefore, doomed to economic failure and expropriation.

Today there exist large modern agricultural enterprises in capitalist countries as well, for instance, in the

United States. But they are not typical of the American approach to agricultural development. The average size of American farms is not more than 150-155 hectares. Within a capitalist environment, moreover, smaller agricultural enterprises are continually displaced by large agricultural enterprises (in other capitalist countries such enterprises are generally one-fifth to one-seventh of the size of those in the United States). This is an endless process in which farms that yesterday were merely average in size will be in the position of small farms tomorrow. For example, between 1935, when the industrial development of agriculture began in the United States, and 1973, the average size of the American farm increased only from 62 to 154 hectares. Yet approximately four million farms and 22.7 million members of the rural population were displaced from agriculture during that time. Capitalism knows no pity, and no matter how desperate the efforts of those who are weaker may be, they will not succeed in averting poverty and extinction under the blow of the stronger. Those who perish in the competitive struggle include large capitalist enterprises as well.

The Soviet path of development rejects such an approach. There has not been a single case of bankruptcy of a collective or state farm. The amalgamation processes that have taken place have resulted from the farms' economic development and the rationalisation of their production activities rather than from the pressures of uncontrollable market forces. All farms are based on a social form of property under socialism, and they represent similar types of enterprises that possess similar rights.

Socialist farms possess still another very significant advantage over both large and small farms that are owned and operated by individuals. Historically no class has been more difficult to organise than peasants. Referring to the isolated character of social life in capitalist villages, Marx wrote that they are formed "by simple addition of homologous magnitudes, much as potatoes in

a sack form a sack of potatoes".¹ This continues to be an obstacle to the farmers' attempts to represent their interests in society. In contrast to this, socialist farms provide to the peasant class unprecedented organisation and cohesion. This advantage cannot be measured in monetary terms or weighted in some other way. But it constantly operates to help the farmer in his most difficult situations and makes it possible for him to look to the future with confidence. For it is always better to work jointly with others than alone.

The approach to the transformation of small-scale agriculture that was indicated by Lenin and for the first time verified through the Soviet Union's own experience represents a general law governing the development of socialism. After the Second World War, in following the principles relating to co-operative activities in the villages worked out by Lenin, many European and Asian countries introduced new methods and new organisational forms into that important socio-economic process in the light of their own specific features. Today most farmers in socialist countries have already entered the stage of co-operative activities, while the number of state agricultural enterprises in these countries is growing each year. Lenin's great prevision is, thus, coming true: "All nations will arrive at socialism—this is inevitable, but all will do so in not exactly the same way, each will contribute something of its own to some form of democracy, to some variety of the dictatorship of the proletariat, to the varying rate of socialist transformations in the different aspects of social life."²

Both the earlier stage of the Soviet approach to agricultural development and its present stage are of considerable international significance. Already in the 1920s

¹ Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 1, pp. 478-79.

² V. I. Lenin, *Collected Works*, Vol. 23, pp. 69-70.

Lenin wrote: "We now possess quite considerable international experience, which shows very definitely that certain fundamental features of our revolution have a significance that is not local, or peculiarly national, or Russian alone, but international."¹

The experience of the past several decades has served to confirm that the course of development initiated by Soviet agrarian policy is, indeed, the only correct approach resulting in progress.

The forms of transformation of small-scale agriculture that are employed today in most developing countries are similar to those that preceded the appearance of collective and state farms in the USSR. They include co-operative activities in the fields of credit, consumption, marketing and supplies and various types of joint activities in the field of production, as well as the creation of societies for co-operative farming. All of these forms have already shown their viability in the USSR, as they are now proving it in developing countries. Time does not stand still and the living conditions of farmers are changing, but a knowledge of the specific features that characterise agricultural development in the USSR can, undoubtedly, be of help in finding the correct course for these countries' further development. Writing in his own time, Engels stated that after socialism will have been victorious in developed countries "when the retarded countries have seen from their example 'how it's done', how the productive forces of modern industry are made to work as social property for society as a whole—only then will the retarded countries be able to start on this abbreviated process of development".²

¹ Ibid., Vol. 31, p. 21.

² Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 2, Moscow, 1973, pp. 403-04.

3. THE ECONOMY OF A CONTEMPORARY COLLECTIVE FARM

It has already been noted that collective farms are one of the basic types of agricultural enterprises. At the present time (neglecting the output of the personal plots of collective farmers) they produce nearly 40 per cent of the country's gross agricultural output. This includes over half of the grain, nearly three-fourths of the cotton and of sunflower seeds, over 90 per cent of the sugar-beet, and over one-third of the meat, milk, and wool. The share of commodity production on collective farms is still higher, namely, 48 per cent of all products, including 55 per cent of the products of land and 42 per cent of the animal products.

What is, then, a collective farm, and how did it become such an important type of socialist agricultural enterprise? Earlier forms of agricultural co-operatives have already been mentioned—associations for the joint cultivation of land, communes, machine associations, artels, and so on. The collective farm resulted from a search for better co-operative forms for carrying out rural economic activities. And at that time it did, in fact, become the highest form of co-operation in agricultural production.

There were three stages in the subsequent development of collective farms. The first was marked by a search for the principles that should govern a rational combination of means of production with the labour of former owners of personal farms, as well as by a search for appropriate juridical, economic, and organisational forms embodying these principles. From an historical point of view that stage may be said to have ended in the mid-1930s, when the All-Union Congress of Collective Farmers adopted the Model Rules of the Agricultural Artel. By that time the fundamental organisational and managerial forms of collective farms had been defined, together with the relevant accounting procedures and rules governing the creation of

social funds. The principles of land tenure in collective farms had been clarified, as were those that concerned their needs for technical and productive services. Similarly, the principles governing the planning of collective farm production became apparent, as did those that governed the selling of output. The right of collective farm members participating in social production to possess personal auxiliary holdings was firmly established, and the social standards governing life on collective farms had in the main been clarified. All this was embodied in the Agricultural Artel's Model Rules of 1935.

The second stage encompasses the next twenty years and ends in the mid-1950s. Above all it is marked by the fact that during that time the most destructive war in their entire history was imposed on the Soviet people. During that time the principles governing the life of collective farms remained practically unchanged. An accumulation in the rural communities' productive potential had taken place in pre-war years, as well as a consolidation in the collective farms' material and technical infrastructure.

The current stage in the development of collective farms began in the mid-1950s. It is during that stage that their very large potential became apparent. Many of the principles and forms governing the organisation of production activities on collective farms were changed, and planning methods were improved. Collective farms acquired property rights over their agricultural equipment and guaranteed monetary payments for labour at firm prices were initiated. In effect, a very large step was taken towards the industrialisation of the collective farms' productive activities. All these changes were discussed at the All-Union Congress of Collective Farmers in 1969 and were embodied in a new Collective Farm's Model Rules.

The new Model Rules provided a more precise definition of the conception of a "collective farm". A collective farm, it states, is a co-operative organisation of farmers who have joined their efforts voluntarily in undertaking

large-scale socialist agricultural production on the basis of social means of production and of collective labour. As one of the social forms of a socialist economy, collective farms fully meet the needs of the development of productive forces in the countryside, and also make possible the management of production by the collective farmers themselves on the basis of collective farm democracy. They make it possible to combine correctly the collective farmers' personal interests with the social interests of the people as a whole.

What is the significance of the collective farm system for the destiny of the Soviet peasantry? Politically it has strengthened the Soviet state and the alliance between workers and peasants which is its principal foundation. Collective farms have provided to farmers real possibilities for actively participating in the management of social production and in the country's overall activities. From an *economic* point of view collective farms have made it possible to develop agriculture on a modern industrial basis, and have created all the necessary conditions for developing large-scale production. From a *social* point of view they have freed the farmers from exploitation and poverty and have made it possible to define realistically the problem of fully overcoming class differences within society. The collective farm has given the farmer a firm foundation in his life activities and has made him master of his own fate.

It was not easy for the peasantry, particularly for the middle peasant, to take a decision to join a collective farm. For this meant contributing to a common pool either his oxen or his plough, if he owned one. Nearly each person was asking himself: suppose I do join, what will happen next? From ancient times cattle were almost viewed as members of the farmers' families. And this was now to be common. In addition, a psychological barrier had existed in the minds of peasants for centuries that now had to be overcome. This was their attachment to private

ownership, to the principle that "this may be small, but it is mine".

How then is the problem of private property solved in a collective farm? How are those traits of a farmer taken into account that relate to his being an owner as well as a worker? Where does the boundary lie that makes possible first a balancing of the private ownership mentality of former private farmers and then the development of conditions for an internal restructuring?

Persons who oppose the socialist system in the countryside and who defend private property as a basis of agricultural production frequently distort the solution of the problem of ownership that is provided by collective farms. In particular, it is often asserted in capitalist countries that the collective farmer is completely and all but forcibly deprived of property.

At the same time it is repeatedly stressed that under capitalism the farmer is a full and undisputed owner of his farm. But in fact both points of view are unfounded.

Let us first consider collective farms. To whom then does the land, which is the principal means of production in agriculture, belong in a collective farm? It has already been mentioned that the country's land was nationalised in 1917 and that it is the property of the whole people. In particular, it may neither be bought nor sold, no one speculates in land, and no one derives an income from merely owning land. The state has subsequently given land to the collective farms in perpetuity for their own use free of charge. The main part of collective farm lands is set aside for social production. Parcels of land whose size is determined by collective farms and by the government are also set aside for the construction of houses and service buildings, as well as for personal auxiliary farming. The right of collective farms to land is protected by law. No one can take away land from them or construct an enterprise or road on it without the collective farm's consent.

During the period of mass-scale formation of collective farms between 1929 and 1932 the problem of land ownership presented fewer difficulties than did the ownership of other means of production. Land had already become the property of the whole people as a result of the October Revolution in 1917 and it had subsequently been transferred to peasants without compensation. Peasants were thus users of land rather than owners.

As for other means of agricultural production (cattle, agricultural implements and equipment), they were contributed to the initial collective farms as membership shares. The category of non-distributable funds, which appeared in 1927, applied only to those assets that collective farms received from the state. One-half to three-quarters of the value of the socialised property of those collective farms that were formed during the period of mass collectivisation took the form of membership shares, while non-distributable funds formed the remaining part.¹ These forms of collective farm property reflected the co-operative character of an agricultural *artel*. Collective farms required an economic basis that would consolidate intra-collective farm relationships. That was the function of non-distributable funds. While expressing the socialist character of collective farm property, they also served to combine social interests with personal interests within collective farms.

Gradually, the collective farms' material and technical infrastructure was strengthened. While their non-distributable funds increased the economic significance of individual contributions declined. By 1967, for instance, non-distributable funds had increased by nearly one hundred times and represented 99.4 per cent of collective farm assets, while the share of assets corresponding to

¹ Shares contributed by individual farmers are returned to them when they leave a collective farm. In contrast to this, non-distributable funds may not be divided among collective farm members. They constitute their common collective property.

individual contributions was 0.6 per cent. The latter's decline is partly attributable to their wearing out. At the same time once a majority of peasants had joined collective farms new contributions ceased.

Under the new Rules individual contributions from new members were no longer required. This marked a qualitative change in the organisation of collective farm life. Today a person's membership in a collective farm is based entirely on contributions of labour, rather than of property. Collective farm property has thus acquired a greater degree of socialist maturity.

The state, too, contributes directly to the formation of non-distributable funds. It contributes large investments into the use of chemicals, land improvement and the mechanisation of production. It also provides credit and compensates losses caused by natural disasters. Beyond this it assumes a growing role in training agricultural specialists and in developing the agricultural sciences.

At the same time that the volume of non-distributable funds has increased they have also undergone a change in composition. Originally they consisted largely of the simplest farm implements, primitive buildings, and draught animals. Today they include tractors, combines, major production facilities, irrigation installations, kindergartens, palaces of culture, and libraries.

There are two forms of socialist property in the USSR—collective farm-co-operative property and state property. What is the former's principal attribute? What does it have in common with state property, and what are its own distinctive features? And how is it developing?

Socialism means above all the termination of man's exploitation by man and the abolition of private property in basic means of production. Since small-scale private property has continued to exist in rural communities even after the nationalisation of land, it was objectively necessary to make use of co-operatives if socialism was to prevail in agriculture. The essential element in co-operation

is some form of group interest among co-operative members. Accordingly, during the early stages of the creation of collective farms the principal task was to develop intra-group collectivism.

Both co-operative ownership and group interest rest on a joint appropriation of the means of production within the framework of an isolated collective. This implies that groups of persons who have joined their efforts also jointly control the means of production at their disposal as they place them at the service of both social production and their own needs. Together with the collective character of labour itself such a co-operative ownership of means of production produces a joint ownership of the resulting output. It also explains the specific features that characterise the functioning of collective farms and their internal relationships as well as external relationships with the state and with other enterprises. It is one of the aspects that links the interests of persons, who were recently individual owners of land, with those of each particular collective and of society at large.

Another aspect concerns the fact that co-operative ownership is a form of social property as well as a form of group property. A collective or a collective farm is more than simply a community of individuals. It also implies forms of social behaviour that are governed by the principle—all for one and one for all. A collective farm member is an owner and user of co-operative property, who is responsible for it and is its collective manager. Co-operatives possess their own collective interests and that means the beginnings of a social interest.

Collective ownership is, thus, distinct from both private and state ownership. Particularly during the early stages of development of collective farms it differs from state ownership by its group character, though it does produce the beginnings of social ownership. As the economy of collective farms develops and farmers acquire a measure of social maturity, and as the alliance of the peasantry with

the working class and of agriculture with industry grows stronger, a strengthening of the social character of collective farm ownership occurs, together with a weakening of its group character.

Both the further development of collective ownership at the current stage and its tendency to overcome its original group character are illustrated by the appearance of new enterprises in rural communities that are jointly created by several collective farms on the basis of shares. The inter-collective farm type of ownership is a special form of co-operative ownership whose appearance is explained by a growing need for a further socialisation of collective farm production. A number of functions have emerged in production and other collective farm activities whose scope exceeds the boundaries of individual economic organisations. This has largely resulted from the rapid development of productive forces and of specialisation. But the appearance of inter-collective farm enterprises has also been encouraged by some of the properties of the co-operative form of ownership. In particular, it requires a direct redistribution of the revenue that is produced by individual collective farms among member organisations. Such a recombining of resources requires a co-operative basis.

Inter-collective farm ownership contributes to co-operative ownership's further development by increasing its level of socialisation and brings it closer to the level of state ownership. Those enterprises that are based on inter-collective farm ownership are able to use the investments and labour resources of collective farms more rationally and are also able to concentrate their efforts on developing the most up-to-date production activities of the industrial type. This often lies beyond the reach of individual economic organisations, or else is not to their advantage. By its nature inter-collective farm ownership is able to create the conditions that are needed for developing agro-industrial complexes. This refers to enterprises that com-

bine both industrial and agricultural production within a single technological, economic, and organisational process.

State-collective farm enterprises and organisations represent a stage of development of the collective form of ownership that is still more advanced. They represent a merging of the state and the co-operative form of socialist property. At the present time such mixed enterprises develop most often in such fields as the construction of plants for processing agricultural raw materials, the production of complex fodders, the production of construction materials, the development of power grids to serve entire rural districts, and the fattening of cattle.

A strengthening of the social character of the co-operative form of ownership has been possible only because collective farms have been developing within an environment that contains the state form of ownership in industry, the circulation sphere, and state farms. This is an objective and historically determined process. It is the state form of ownership that determines all relationships and linkages within the national economy. In particular, it makes possible both the strengthening of the collective farms' material and technical infrastructure and their planned crisis-free development. State property has also made it possible for collective farms to apply the principle that no person can expect to receive anything but consumer goods in return for his labour. It is from state property that collective farm ownership derives its socialist character. Similarly, the prevalence of the private form of ownership under capitalism makes it impossible even for agricultural producer co-operatives to differ from ordinary private enterprises or firms in any significant way.

We have seen the manner in which the problem of ownership was resolved on collective farms, and the way in which the co-operative form of property subsequently developed. Let us now consider briefly how matters stand in the development of personal agricultural property in capitalist countries. Let us also analyse the corresponding

prospects of individual farmers for an "independent" management of their farms. In particular, let us turn to the agriculture in the United States, which occupies a leading position in the capitalist world.

There are currently 2.8 million farms in the USA, most of which are small. But they do not constitute the primary basis of American agriculture, as American economists occasionally assert. For 35 per cent of all farms, whose individual output is valued at 10 thousand dollars and more per year, contribute nearly 90 per cent of total marketable output. The remaining 65 per cent of the farms account for only 10 per cent of the output. Similarly, those farms whose output is valued at over 40,000 dollars per year contribute 60 per cent of total agricultural production even though they constitute only 9 per cent of all farms.

But it is not merely the fact that small family farms no longer play a significant role in the USA's agricultural output that is important, nor is it the large size of some of that country's farms. Rather it is the appearance and rapid development of new organisational forms that were traditionally not characteristic of capitalist agricultural production. They include agricultural corporations, cartels, associations, and co-operatives, which are managed in the manner of industrial monopolies, that is, on the basis of large-scale capitalist entrepreneurial activities. There is, in short, neither "family" labour nor individual management on such farms.

Individual American economists are feverishly seeking to make adjustments in the old mythology concerning the "family farm". Increasingly the adjective "small" is omitted when referring to a "family farm", while the concept itself is acquiring the meaning of a "family-owned farm". The term "family farms of a standard income level" is now employed more and more frequently, while the boundary of "correspondence" of this income to the present level of agriculture is continuously rising. In the early post-war years it was five thousand dollars per

farm, and later 10 thousand dollars. More recently it was described as 20 thousand dollars and in the future it is expected to be 40 thousand dollars.

It may be recalled that in the past the concept of "family farm" implied above all an absence of hired labour, or else its use on an insignificant seasonal basis. It is this type of farm based on the labour of farmers and of members of their families that was proclaimed, at one time, as the social foundation of American agriculture. Already at the beginning of this century in his critique of the concept of "labour" (family) agricultural enterprises, Lenin wrote that it "is misleading and deceives the public, for it creates the impression that *hired* labour is not employed".¹ Today few persons in the United States refer to the absence of hired labour on farms. A family farm is defined as one in which 1.5 hired workers are employed each year.

Such criteria speak for themselves. Yet another factor should also be noted. While the industrialisation of agriculture has greatly reduced expenditures of live labour in agriculture itself, the labour of industrial workers producing means of production for agriculture has become increasingly important. Labour expenditures in farming declined by only 10.3 per cent in the United States between 1910 and 1940, and by some 66 per cent during the next 30 years (between 1940 and 1970). At the same time capital investments increased by 62.1 per cent during the thirty years that preceded the war, and by four times between 1940 and 1970. Thus, the agrarian capitalist seeks to employ his capital primarily in purchasing means of production. In doing this the corresponding basic objective is to increase the quantity of materialised labour that is applied by each agricultural worker. In other words, contemporary agriculture employs machines in a capitalist way.

¹ V. I. Lenin, *Collected Works*, Vol. 22, p. 31.

The large-scale displacement of live labour from agriculture by capital does not automatically imply that the role of hired labour is reduced. It is true, of course, that by increasing the capital applied it is possible to employ a smaller volume of labour on the farms themselves. But this does not alter the capitalist character of the farms. Unfortunately, American statistics do not make it possible to calculate the proportion of all hired persons participating in agricultural activities within the rural population in the pre-war period. It was 13.1 per cent in 1945, 18.8 per cent in 1950, 23.7 per cent in 1960, and 25.6 per cent in 1970. Farmers' expenditures on the wages of hired labour increased by more than 4.3 times between 1935 and 1970.

Bourgeois economists and sociologists often assert that collective farms destroy the farmer's interest in the effectiveness of economic activities. Because, they state, the farmer is deprived of private property, he is also deprived of an incentive to work, since a socialised economy does not belong to him personally. Collective labour, in the opinion of bourgeois sociologists, can only produce laziness and eliminate all sense of responsibility for economic affairs. They reason that when persons who are strangers work together each will seek to work as little as possible and to leave as much work as possible for his neighbour to do. Moreover, since a rigid centralisation is supposed to exist in Russia, they assert that collective farmers themselves do not take any decisions concerning economic activities and merely serve as pawns in the hands of leaders in the centre. Such is the reasoning of bourgeois "Sovietologists", as they call themselves, in its general outlines.

That reasoning usually reflects either a lack of knowledge of the realities of collective farm life and a lack of interest in acquiring such knowledge or else it reflects its authors' own psychology as derived from their experience of life in a capitalist society, which is, indeed,

governed by the principle that "each person looks after himself and only God looks after everyone". In most cases, however, it appears to reflect both, since both individualism and anti-Sovietism are basic ingredients of bourgeois ideology.

A collective farm is, indeed, a collective economic organisation. But this does not mean that it is only labour activities that take place collectively. For such farms are also managed collectively. More precisely, decisions are taken either at a general meeting (in the case of the most important problems) or else at meetings of a special executive body—the collective farm board, which is elected by the entire collective. Decisions are based on collective farm democracy, which makes it possible to properly combine the personal interests of collective farmers with their social interests.

According to one of the provisions of the Model Rules, which is the basic juridical document governing collective farm life, each member of a collective farm has a right to "participate in the management of collective farm affairs, elect its administrative bodies and be elected to them, convey proposals for improving the activities of the collective farm and overcoming shortcomings in the work of its board and its official persons". Collective farmers, moreover, not only possess these rights, but, according to another article of the Rules, also have an obligation to apply them in practice.

Let us examine briefly the organisation of management on a collective farm. The general meeting is the highest body in regulating its affairs. It adopts amendments to the Model Rules, elects its administrative bodies (its board, the collective farm chairman, and the inspection commission). It also decides on matters relating to the acceptance of new members into the collective farm and the expulsion of members, examines and approves the basic documents that govern the collective farm's life and its rules and regulations, including the board's and the inspection commis-

sion's reports. In addition, it passes on decisions concerning the appointment or release of executives and considers questions relating to different uses of land. On all these issues decisions made by the board do not become valid until they have been approved by the general meeting.

General meetings are called at least four times a year, and also whenever such a meeting is requested by one-third of the collective farm members. A meeting may also be called by the inspection commission. A general meeting is in session officially when two-thirds of all collective farm members are present. Decisions are taken by simple majority vote, and the calling of a general meeting and its agenda are announced to collective farm members at least seven days in advance.

The collective farm's board is elected for a period of three years. It reports to the general meeting concerning its activities once a year. Sitzings of the board are called whenever they are needed, and at least once a month. Such sittings are in session officially when at least three-quarters of the board's members are present, and decisions are taken by simple majority vote. The collective farm chairman, who is also chairman of its board, is elected for a period of three years. He carries out the day-to-day management of collective farm activities and supervises the fulfilment of decisions taken by the general meeting and the administration. He also represents the collective farm in its relations with state agencies and with other bodies and organisations.

The collective farm's financial accounts are the responsibility of its chief accountant who is appointed by the general meeting. In addition, the board appoints specialists to manage individual areas of activity. Team and section leaders are elected at general meetings of these operational subunits of collective farms. The collective farm's inspection commission is also elected for a period of three years, and its chairman is elected by the commission itself from

among its own members. Its findings are presented to the general meeting for approval at least twice a year.

The collective farm's general meeting decides whether to elect the board, the chairman, and members of the inspection commission by a show of hands or by balloting. The collective farm chairman, members of the board, and the chairman and members of the inspection commission may be dismissed through a decision of the general meeting before the termination of their term of office whenever they lose the confidence of collective farm members.

Such are the principal norms that govern the internal life of collective farms. They constitute the general basis of collective farm democracy and make it possible for each collective farm member to feel that he is an equal owner of all that the collective farm possesses. In particular, labour within a social economy is the only source of wealth in a collective farm, and all collective farm members possess an equal right to work and to be rewarded on the basis of their work. Those who work more and better are able to live better.

The experience of several decades has shown that when it is correctly organised the joint labour of workers possessing equal rights encourages both a feeling of competition and a propensity for comradely mutual assistance. Individualistic strivings and secretiveness are replaced by a spirit of healthy rivalry and a desire to rationalise as much as possible both the work that is assigned to one's own sector and the work that is assigned to others. Joint discussions of plans and the results of the work done contribute to the discovery of additional production potentials and more generally to finding the best solutions to the diversity of problems that arise. Such attitudes become a reality as soon as persons become conscious of the equality of their rights as well as of their responsibilities for a common cause.

Let us now turn to a highly important question of decision-making. Decisions concerning how much to

sow and also where to sow and in what manner are usually made by the board and are reported to the general meeting. Those decisions can only be influenced by the collective farm members themselves. Similarly, it is the collective farmers themselves who decide what measures should be taken to shelter and feed cattle (this is generally done on the basis of recommendations made by specialists). And again questions relating to the distribution of the collective farm's revenue are settled by a general meeting. In short, it is the collective that decides all basic questions.

This does not imply, of course, that collective farm members are continually engaged in meetings and discussions. There exists a general principle, namely, that while decisions are made jointly, the responsibility for carrying them out is personal. Neither a rank-and-file member nor a team leader, nor the chairman of the board himself can escape from his personal responsibility before the collective as a whole for poor work. A clear planning of work and a correct establishment of work quotas make it impossible to hide behind one's neighbour's back. Thus, democracy in taking decisions, personal responsibility in carrying them out, social control over their execution, and the traditional honesty of the Russian farmer and his capacity for hard work combine to produce the final result.

There are many examples in which the influence of the collective farmers themselves on the management of farm activities has been decisive. This does not simply refer to situations in which critical views have been voiced at general meetings and sittings of the board. In the course of their work collective farm leaders often acquire important skills that may be applied to wider spheres of responsibility outside the collective farms. But it is often difficult to persuade the collective farm members to agree that such persons should be released. And conversely, there are many cases in which the collective farmers them-

selves have taken the initiative in replacing their managers because of poor work or errors of judgement. Generally, the principles of collective farm democracy are well understood by their members.

Just as one soldier does not make an army, individual workers always seek to work jointly with others. Under capitalism as well, farmers often seek to form associations in the pursuit of common activities. There exist different types of co-operatives, a diversity of rural clubs and of societies for mutual assistance and their numbers are increasing. In seeking to reduce the risks that attach to economic activities farmers develop new forms for struggling against the unpredictable behaviour of markets and enter into a diversity of special-purpose contracts and agreements both among themselves and with non-agricultural firms. It is to these new phenomena that the term "integration in agriculture" refers.

As in the case of many other progressive phenomena, however, the process of integration often assumes distorted forms in a capitalist society. In fact, its consequences are occasionally very harmful to the farmers themselves. In most cases they serve to reduce the original rights of farms and to eliminate their former independence in taking decisions. Their actual influence is such that more and more often it is the farmer who loses his right to be the manager of his own property. When they are united, farmers find it easier to resist industrial and commercial firms that are economically more powerful. But when they act alone, they are more vulnerable to the many pressures of big business, who are increasingly able to govern their activities, often without the farmers themselves ever noticing this.

Let us note in this connection the findings of a study carried out by M. Harris and D. Massy,¹ two American economists who have studied the contracts of farmers with

¹ M. Harris, D. Massy, *Vertical Coordination via Contract Farming*, Washington, 1968, p. 88.

non-agricultural firms. In 1968 they grouped 420 contracts relating to the production of major agricultural products in different regions of the United States according to the three basic stages of farming activities, namely, 1) the acquisition of initial inputs (seeds, plants, and livestock); 2) the production of output; and 3) distribution. A special scale was constructed for each of these in order to evaluate the influence of non-agricultural firms on decisions relating to farming activities.

This has shown that the average measure of interference by non-agricultural firms into the activities of American farms was 52 per cent for the first stage, 50.4 per cent for the second, 61.1 per cent for the third, and 54.4 per cent for all three stages taken together. Thus, in the United States over a half of a farmer's decisions today are actually taken outside his farm. In many cases, in fact, his production processes are those of a technical sub-contractor, even though formally he may continue to regard himself as an "independent owner" who is "free" to take decisions. Actually, both the farmer's life and his activities depend increasingly on the will of firms representing large industrial and commercial business organisations.

It is they who tell the farmer what to sow and when to reap, and it is they who establish prices for the farmers' products that are advantageous to themselves. Official statistics that have been collected in the United States over many years indicate that on the average the farmer receives under 40 cents from each dollar that consumers pay for processed food, and sometimes even less. It should be difficult to develop a sense of pride in such a situation, particularly in the case of small farmers who are barely able to make ends meet. In the case of Russian farmers, on the other hand, the advantages of socialism and the sense of participation in management that is created by the organisational structure of collective farms have made possible achievements over a period of 40-45 years that they could not have conceived in the context of individual

Table 1

The Development of Collective Farms: Basic Indicators

	1928	1934	1955	1975
Per collective farm:				
Number of households	13	68	231	473
Area under cultivation (thous hectares)	0.04	0.4	1.7	3.6
Head of cattle, total	5	44	308	1,664
including cows	2	13	115	535
Pigs	2	15	146	844
Tractors	0.2	0.8	6.6	37
Non-distributable funds (thous rubles)	...	47*	119.3	3,216

* 1937.

management. These are conveyed by the data in Table 1.

In terms of contemporary standards the productive capacity of early collective farms was low. Even by the mid-1930s when collectivisation was completed, there were only seventy peasant families per collective farm, together with 400-500 hectares of arable land, a small number of cattle, 6,000 rubles worth of basic productive assets (in the USSR this does not include the value of land) and less than one tractor. As early as 1934, however, their economic capacity had increased very substantially (see Table 1). At that time nearly three-quarters of the former peasant households and eight-tenths of the land under cultivation were associated with collective farms.

After 1935 collective farms became gradually larger. Decisions to amalgamate into larger units were taken at general meetings of farms. The state-owned machine and tractor station (MTS) played an important role in encouraging such amalgamations. Subsequently, and especially during the past 15-20 years, the material and technical infrastructure of collective farms developed

substantially. On the average, the productive assets of a collective farm today are quite large. In 1975 the overall volume of non-distributable funds per collective farm was close on three million rubles. These constitute the social property of the farm that cannot be distributed and generally include all basic and circulating means. In addition, collective farms now have 13 hp of energy per worker. The volume of basic productive assets available to every group of ten workers today is on the average the same as that available to an entire collective farm in 1934.

Today the scale of agricultural production on collective farms is large both in terms of the land cultivated and in terms of the volume of output. While the gross output of a collective farm averaged 0.6 million rubles in 1960 (in 1965 prices), it rose to 0.8 million in 1965 and is currently more than 1.1 million rubles. There are, of course, individual agricultural enterprises in the world whose output is still larger. But on the average, in no other country is the volume of output per enterprise as large. Even in those socialist countries where the process of a socialist transformation of small-scale peasant households has been completed, the agricultural co-operatives are not as large as those in the USSR.

At the present time collective farms possess basic and circulating assets valued at 91.7 million rubles, while their capital investments are over 10,000 million rubles each year. In early 1976 their energy capacity was 186 million hp. This is 11 times more than in 1935. There are over a million tractors on collective farms, nearly 300 thousand grain-harvesting combines, and more than 500 thousand lorries. In addition to nearly two million tractor drivers, combine operators, and truck drivers there are 548 thousand specialists with a higher and secondary education who work on collective farms.

Thus, as a result of the efforts of the Soviet people in strengthening the collective farms' material and production infrastructure, the world's largest farms in terms of

area under cultivation have also become organisations that are technically well equipped. Wide opportunities now exist not only for applying modern equipment, but also for employing it in more economic, rational, and effective ways. In the case of small farms the use of modern equipment is usually expensive. In the USA, for example, expenditures on fuel and oil alone per unit of marketable output are 3.5 times larger than they are on large farms. The ratio of output per tractor is on the average 60 times larger on those big farms whose marketable output is over 100 thousand dollars than it is on farms whose yearly revenue is 2,500 dollars. As a result, a large-scale underutilisation of available equipment exists. More specifically, it has been estimated that in the United States 44 per cent of the tractors were used less than 400 hours per year, although the average number of hours of work for a tractor is 605 hours. Because in the USSR the area of each farm is sufficiently large to permit a maximum utilisation of modern tractors, combines and other machines such a situation could not develop.

4. WHAT IS A STATE FARM?

A continuing consolidation of the state sector within agriculture represents a central element in its socialist transformation in the USSR. State farms are the basic form of state agricultural enterprises.

The tasks and functions of state farms in developing socialism in the countryside were defined by Lenin even before the October Revolution. In particular, at the First All-Russia Congress of Peasants' Deputies in May 1917 he noted: "...We know that in America in 1865 the slave-owners were defeated and hundreds of millions of dessiatines of land were distributed among the peasantry for nothing or next to nothing, and nevertheless capitalism dominates there more than anywhere else and oppresses

the mass of the working people as badly as, if not worse than, in other countries. This is the socialist teaching, this is our study of other nations that firmly convinces us that without the common cultivation of the land by agricultural labourers using the best machinery and guided by scientifically trained agronomists there is no escape from the yoke of capitalism."¹

The first state farms were organised immediately after the October Revolution, and the principles governing their development were formulated in the Decree on Land and in the 1919 "Instrument on the Socialist Organisation of Land Exploitation and on Measures to Change Over to Socialist Land Cultivation". By 1922, 4,300 state farms had already been organised on the basis of former landed estates. Of 150 million hectares that were confiscated from owners of large estates, the bourgeoisie, and the tsar's family, 3.3 million hectares were transferred to state farms. Since then, like collective farms, state farms have experienced a considerable socio-economic and organisational development. Nevertheless, throughout the history of the USSR a number of fundamental features have distinguished state farms as socialist state agricultural enterprises.

Above all a state farm is a state enterprise that is based on the state form of socialist property. Unlike in the case of the collective farm, all means of production that are employed on a state farm as well as the agricultural output that it produces belong not to a particular collective of workers, but to the state. As regards collective farms, their higher organ of administration is the general meeting, whereas state farms are governed by the principles of one-man management.

All state property is assigned to the state farm for use in production processes. Planned assignments are given to a state farm concerning the sale of its output to the state.

¹ V. I. Lenin, *Collected Works*, Vol. 24, p. 503.

These serve as the basis for its own internal planning of the output's actual volume and structure. The economic activities of contemporary state farms are financed from their own revenue.

Under the Soviet approach to agricultural development state farms have always been given a leading role. Because they represent a state form of socialist ownership, their influence on the development of collective farms and on the country's agriculture as a whole continues to be very considerable. The two principal tasks that confronted the very first state farms were: 1) to supply more high-quality and low-cost agricultural output to the country, and 2) to set an example for the socialist reorganisation of small-scale farming. It was noted in the "General Foundations of Land Tenure and the Organisation of Land", which was approved in December 1928, that "because they are large-scale state agricultural enterprises, state farms constitute one of the foundations of socialist development in agriculture and are called upon to assist the peasantry that surrounds them through their example in effective work, in managerial practices, and in the use of technical and cultural means, thus encouraging the growth of agriculture, its reliance on co-operative activities and its collectivisation".

A major role in the development and consolidation of the collective farm economy was played by the machine and tractor stations which represented a special form of state enterprises in agriculture. They were organised on a number of the country's state farms towards the end of the 1920s in order to assist collective farms and to bring about a mechanisation of operations in the sowing and reaping of agricultural crops. Beginning in 1929 they were transformed into independent enterprises whose principal task was to make their equipment available for servicing the production activities of collective farms. Such services were based on contractual agreements with the collective farms in return for a

specified payment. Generally, the equipment that was delivered to agriculture was concentrated at the MTSs.

Machine and tractor stations thus provided a material and technical basis for employing efficiently the relatively modest amount of equipment that was delivered to agriculture at that time. They also assisted collective farms in problems of management and organisation, and contributed to the further consolidation of the alliance between the working class and the peasantry. It was through the MTSs that an entire army of specialists in the mechanisation of agriculture, namely, tractor drivers, combine operators, truck drivers, and other agricultural workers, were able to employ advanced equipment and bring the skills of industrial labour to the collective farms.

A number of socialist countries, who have already reorganised their agriculture on the basis of co-operatives, are currently making wide use of the experience of the MTSs. Their MTSs contribute to the further development of young co-operatives and to their transformation into modern large-scale socialist enterprises based on collective labour and social ownership. The experience of socialist countries has confirmed the objective need for MTSs in situations in which agriculture is being collectivised and a co-operative-collective farm structure is being established.

MTSs existed in the USSR until 1958. At that time there were 8,000 of them, possessing more than 600 thousand tractors, 321 thousand grain-harvesting combines, and many other types of agricultural equipment. In 1958 they were reorganised as centres of technical maintenance, while their equipment was sold to collective farms. The need for such a step was dictated by the fact that by the end of the 1950s collective farms had gained in economic strength, while the production and delivery of agricultural equipment was increasing rapidly. Collective farms were now able to pay themselves for the new tractors and other machines that they were

acquiring. They had already developed considerable skills in working with such equipment and had developed their own skilled specialists in mechanisation. Since that reorganisation of the MTSs the state has been selling agricultural equipment directly to both collective and state farms.

The period of solid collectivisation in the Soviet countryside also represented an important stage in the development of state farms. More than 2,500 state farms were organised between 1928 and 1937 largely on unoccupied state-owned land. The state sector's contribution to total agricultural output increased. While the corresponding share of state farms was only 1.5 per cent in 1928, this increased to 12.8 per cent in 1937. Over this period the overall volume of output of state farms increased by more than nine times. Thus, aside from setting an example in the management of large-scale social farming and thus helping the development of collective farms, the state sector of agriculture also rapidly increased its own productive capacity.

State farm workers were also among the first to participate in the large-scale development of the virgin lands in Siberia and Kazakhstan. Between 1954 and 1956, 425 large grain-producing state farms were organised in the steppes of these regions, which initiated production on 14 million hectares of virgin or unused lands. Subsequently, too, the development of virgin lands continued to be based primarily on the establishment of state farms. For the Russian Federation as a whole 1,267 new state farms were organised on virgin lands between 1953 and 1960, and 588 others were organised in Kazakhstan. Altogether approximately 42 million hectares of new lands were added to cultivation. Virgin lands have delivered 566 million tons of grain over the past 20 years as well as a large volume of other types of farm produce. Today the newly settled lands contribute 27 per cent of all grain production.

State farms continue to play an important role. In the 1960s their large-scale development was concentrated near large cities and industrial centres in order to supply them with milk, potatoes, and vegetables. In addition, new state farms have been set up in areas possessing large-scale irrigation facilities, such as the Hungry Steppe of the Uzbek SSR, the Northern Caucasus, and the Crimea. At the same time existing state farms in those areas have been developed further. Today, as large-scale livestock-raising farms of the industrial type as well as agro-industrial and inter-farm associations are being organised throughout the country, state agricultural enterprises are playing once again a leading role in these activities. Between 1953 and 1974, 12,800 new state farms were established throughout the country. This is 70 per cent of their total number. Over the entire post-war period the productive base of the state farm sector of Soviet agriculture has developed as follows (Table 2).

Table 2

The State Farm Sector: the Development of Its Productive Base

	1950	1960	1975
Land under cultivation (million hectares)	13.5	67.2	107.2
as a percentage of the total land under cultivation	9.5	33.1	49.2
Head of cattle (million)	2.8	14.4	35.6
as a percentage of the total for the country	4.9	19.0	32.0
Number of cows (million)	0.8	5.1	12.1
as a percentage of the total for the country	3.2	14.7	28.9
Pigs (million)	2.5	12.7	16.2
as a percentage of the total for the country	10.2	21.6	28.0

Thus, the state farms' total land under cultivation grew by almost eight times between 1950 and 1975,

while the number of cattle on state farms increased by 12.7 times, that of cows by more than 15 times, and of pigs by 6.5 times. Today state farms control nearly one-half of the country's land under cultivation, one-third of its cattle and more than a quarter of its cows and pigs. Over those years the state invested very considerable means into the material and technical infrastructure of state farms and into the development of their manpower resources (Table 3).

Table 3
State Farms: the Growth of Their Material and Technical Base and the Development of Their Manpower Resources

	1950	1960	1975
Overall energy capacity (million hp)	9.8*	53.7	204.9
Basic productive funds (thous million rubles)	3.0	11.4	70.0
Fleet of tractors (thous)	112	403	1,038
Number of grain-harvesting machines (thous)	38	206	351
Number of lorries (thous)	29	238	468
Number of workers (total, million persons)	2.4	5.8	11.0
Number of specialists (thous)	31**	184	659
Number of machine operators (thous)	126	812	1,830

* 1954.

** 1953.

These data show that the state farms' basic productive assets increased by more than 23 times between 1950 and 1975, while their energy capacity increased by 20.9 times. The number of tractors, combines, and motor vehicles that they employ increased by several times. Although the overall number of workers on state farms increased by 4.6 times, the number of persons with a higher or secondary education increased by

21.2 times, and that of machine operators by 14.5 times. Today state farms account for some 45 per cent of the total energy resources employed in the country's agriculture, and for over 50 per cent of the basic productive assets of both collective farms and state farms.

Important changes have also taken place in their economic potential. The average size of their basic resources has increased as follows (Table 4).

Table 4
Average Size of State Farms

	1928	1934	1940	1950	1960	1975
Per state farm:						
Land under cultivation (thous hectares)	0.8	2.4	2.8	2.6	9.0	5.9
Head of cattle (total)	97	648	592	562	1,957	1,973
including cows	32	284	229	170	689	670
Pigs	31	344	459	500	1,715	892
Sheep and goats	403	1,305	1,420	1,530	4,280	3,494
Tractors (in terms of 15 hp units)	2	23	24	26	103	261

In short, while at the beginning of solid collectivisation state farms were larger than collective farms, their economic capacity was likewise limited. At that time the average state farm possessed only 800 hectares of land, two 15 hp tractors, and a modest number of cattle.

Since then state farms have become large-scale mechanised enterprises, each possessing approximately 20 thousand hectares of agricultural land. At the beginning of 1976 all basic productive assets and circulating funds amounted to 5.4 million rubles per state farm. Today their staff includes over 36 specialists per farm, of which 19 are plant specialists, animal specialists, and veterinarians, and also over 102 machine operators. In addition, the intensity of specialisation processes has sharply increased

since 1960. In particular, the number of highly specialised poultry farms has more than trebled, while the number of state farms specialising in fruits and grapes, in fruits and vegetables, and in potatoes has more than doubled. Similarly, the number of state farms specialising in meat and dairy products has increased by 2.5 times, while the number of those specialising in cereals has increased by 83 per cent. It is these increases in the number of state farms as well as the strengthening of their material and technical infrastructure, and their growing specialisation and concentration that account for the rapid increase in their gross output (Table 5).

Table 5

State Farms: Increases in Gross Output

	Unit of measurement	1950	1960	1975
Gross output of state farms	thous million rubles	2.6	11.6	28.6
Output of:				
grain	million tons	6.5	46.4	61.6
cotton	" "	0.2	0.6	2.2
vegetables	" "	0.8	4.3	9.6
meat (slaughter weight)	" "	0.4	1.9	5.3
milk	" "	2.1	10.5	27.2
eggs	thous million	0.2	2.5	28.2

An analysis of the data in Table 5 shows that the gross output of state farms has increased by 11 times during the post-war period. During that time their relative weight has increased from 0.7 per cent to 32.1 per cent. Their share in the output of the products listed in Table 5 increased from 11 per cent to 44 per cent for grain, from 4 per cent to 28 per cent for raw cotton, from 11 per cent to 41 per cent for vegetables, from 11 per cent to 35 per cent for meat, from 6 per cent to 30 per cent for milk, and from 2 per cent to 49 per cent

for eggs. The state farms' rapid development has made it possible for the state to rely on them increasingly in its general purchases of agricultural products. While generally the share of state farms in gross output is only 30 per cent in recent years, in terms of marketable output that share is equal to 41 per cent. On the average, state farms sold to the state more than 45 per cent of the centrally purchased grain between 1971 and 1975, as well as over a quarter of the cotton, over 30 per cent of the potatoes, 57 per cent of the vegetables, 44 per cent of the milk, cattle, and poultry, over 70 per cent of the eggs, and 46 per cent of the wool. For most products their unit costs of production are lower than on collective farms, as are expenditures of labour per unit of output. More specifically, the latter are lower by 0.4 man-hours per centner of grain, by 9 man-hours for cotton, by 4.7 man-hours for vegetables grown in open fields, 14 man-hours lower for cattle (gain in weight), nearly 50 per cent lower for pigs (gain in weight), and about 78 per cent lower for eggs (per 1,000).

In post-war years there have also been changes in the economic mechanism, so to speak, that governs the operation of state farms. Before 1954 their economic relationship to the state was usually one in which their operations were largely financed from the state budget. The principal types of expenditures (capital investments, expenditures on the formation of basic herds, increases in circulating stocks) were largely met from the state budget in the form of grants. In addition, most state farms operated at a loss, and these losses were also met from the state budget.

In the case of most crops (except for industrial crops) existing purchasing prices for products of state farms did not cover production costs, and the system of planned subsidies for the development of state farms was ingrained in managerial practice.

In 1954 the system of planned subsidies was abandoned

and state purchasing prices for some agricultural products were increased. Although this made it possible for some of the state farms to operate without losses, the level of their profits was low. Accordingly, capital investments continued to be largely financed by the state, and at that time their volume did not depend on specific results. There were, thus, no incentives to employ the productive assets that the state farms received in the most effective way.

Between 1967 and 1974 approximately one-half of the state farms were experimentally placed on a financially autonomous basis. The remaining half has been operating under similar conditions since 1975. This refers to a system under which all expenditures that are incurred in carrying out their planned production and delivery assignments are met from their own revenues. This includes a level of profit that will permit the state farm to expand its output. Financing from the state budget is, therefore, no longer required, and whenever such funds are still given they play an auxiliary role.

Such a shift to a financial autonomy of state farms presupposes a wider and fuller reliance on economic mechanisms (prices, credit, profits), the use of modern forms and methods of planning and production management, a greater managerial autonomy of state farms, and a greater measure of financial responsibility on their part in improving all of their activities. Their profits have now become the principal source for financing their extended reproduction, and whenever they are insufficient they are supplemented by credits from the State Bank. Grants from the state budget continue to be employed, however, in financing the construction of houses, schools, medical, cultural, welfare and communal institutions as well as installations associated with land improvement, and also power transmission lines. The state also provides funds for financing the construction of new enterprises, poultry factories, livestock production facili-

ties of the industrial type, and greenhouse complexes. New purchasing prices have been established for the output of those state farms that operate on a financially autonomous basis. They correspond to those prices that are paid to collective farms.

State farms have been given wider rights in their finances and production activities. Their centrally planned norms no longer include cost-reduction indicators and the number of workers to be employed. The state farms themselves determine both their planned level of profits and their yearly wages fund, subject to their approval by higher bodies, who may also use their residual profits for purposes of centralised redistribution. In their planning of capital investments state farms are now only given the overall volume of centrally funded investments. Their organisational structure, personnel, and estimates of administrative expenditures fall within the area of responsibility of their directors.

In marketing their output state farms now have the right to develop direct relations with industrial and commercial enterprises. They may also enter into direct relations with both collective farms and other state farms in creating either productive or non-productive facilities or enterprises. Similarly, whenever higher bodies have no objections, they may sell surplus tractors, machines, seeds, fodder, and equipment to other agricultural enterprises.

State farms have special funds for distributing bonuses to workers and managerial engineering and technical personnel and office workers, to present awards to winners of prizes in socialist competition, and to finance one-time assistance grants. There are also funds for social and cultural activities and for housing construction, which are intended to serve the workers' cultural and welfare requirements.

Other socialist countries have made wide use of the Soviet Union's experience in establishing and developing

state farms in their own socialist reconstruction of agriculture. There, too, state agricultural enterprises were initially formed on land confiscated from big landowners. Subsequently their development has varied in different countries. In the Mongolian People's Republic, for example, it has been based on the development of virgin and unused lands. In Czechoslovakia it has been based partly on the establishment of state farms in regions adjacent to its borders, and partly on the reorganisation of co-operatives as state farms. In Poland, too, some of the state farms were organised in connection with the settling of western territories, while another part was formed by adding lands bought from individual farmers to already existing state farms. In Yugoslavia they were largely created on the basis of land bought from individual farmers and of land that had ceased to be cultivated for one reason or another. In the development of the socialist countries' agriculture state farms play an important role as training grounds for acquiring practical experience in managing large socialist enterprises as well as producers of agricultural output.

5. PERSONAL AUXILIARY HOLDINGS

While social production constitutes the basic form of agricultural production, personal auxiliary holdings also exist and are a part of the personal property of Soviet people. Under socialism the larger part of personal property originates in income from labour activities contributed to social forms of production, i.e., as a return for labour. As the national income grows, this part of personal property also increases steadily. Personal auxiliary holdings represent an extra source of the personal property of Soviet citizens.

When referring to the social life of Soviet farmers,

bourgeois authors often emphasise that the "private sector", as they call it, plays an extremely important role in Soviet agriculture. This generally refers to the personal holdings of collective farm members and to those of workers and employees of state farms. Usually their existence is contrasted with social production. It is suggested that they do not differ from private farms, and also that collective farmers and state farm workers are primarily interested in working on these plots rather than participating in social production activities.

Let us examine these misrepresentations one at a time, beginning with the role and position of personal farming plots in the production of agricultural products.

Indeed, it is true that the contribution of these farming plots to the production of agricultural products is quite important, particularly in the case of certain specific agricultural products. Their relative share in the country's gross agricultural output was 37.2 per cent in 1940, 34.9 per cent in 1960, and less than 28 per cent today. Their contribution is especially important in the case of eggs (94 per cent in 1940, 39 per cent in 1975), meat and milk (72-77 per cent in 1940 and 31 per cent in 1975), vegetables (48 per cent in 1940 and 34 per cent in 1975), and potatoes (65 per cent in 1940 and 59 per cent in 1975). Their contribution to the production of grain is only 1 per cent, and that of sunflower seeds is only 3 per cent. Similarly, sugar-beet and cotton are produced entirely through the social form of production.

At the present time there are 32 million families who are producing agricultural products on personal farming plots. This includes 13.9 million collective farm households and a similar number of holdings belonging to industrial and office workers living in rural areas. The latter include approximately 7.5 million plots of state farm workers and also four million farming plots of industrial and office workers living in small towns and

settlements. The personal auxiliary holdings of collective farm members contribute approximately 55-60 per cent of the output of all such types of personal farming plots. When taken together all personal farming plots employ 8.1 million hectares of the country's agricultural land (1.4 per cent) and maintain 24.6 million head of cattle (23 per cent), 13.6 million pigs (19.4 per cent), and 27.4 million sheep (19.2 per cent). Their basic productive assets are currently 9,000-10,000 million rubles. This represents 6-7 per cent of all basic productive assets employed in agriculture.

In order to gain a correct understanding of the essence of personal auxiliary holdings as one of the important sectors of socialist agriculture, their analysis should be approached scientifically and objectively rather than in terms of specific subjective concepts that may be closer to the hearts of bourgeois sociologists. Lenin taught that to avoid becoming lost within the enormous diversity of conflicting opinions it is necessary "to examine every question from the standpoint of how the given phenomenon arose in history and what were the principal stages in its development, and, from the standpoint of its development, to examine what it has become today".¹

The appearance of personal auxiliary holdings at a time when villages were experiencing a socialist transformation is primarily attributable to specific economic causes. During the early stages of the collective and state farm movement socialist social enterprises were economically weak. At that time they were not able to meet by themselves both the food requirements of the working class and the farmers' own need for agricultural products. The economic weakness of the early collective farms is also attributable to low payments for the work

¹ V. I. Lenin, *Collected Works*, Vol. 29, p. 473.

of collective farmers. In addition, work was seasonal, and there existed a surplus of labour resources in rural communities. It was in order to meet all these problems that personal auxiliary holdings were established. It was the economic need for an auxiliary source of food for the population and of income for the farmers that explained the existence of such holdings. Although this is far less true today, it continues to be a basic cause for their existence. Today 80 per cent of the output of personal auxiliary holdings is consumed by the collective farmers themselves. This is the figure that best conveys the social role of personal auxiliary holdings in the USSR.

During the early stages of the establishment of collective farms there also existed a second important reason for the appearance of personal auxiliary plots. It derives from Lenin's principle of proceeding gradually in bringing peasant households into co-operatives. The essential nature of middle peasants is dualistic, since they are both workers and property owners. This fact could not be ignored in developing socialism in the countryside. Accordingly, the principle of combining both social and personal farming activities within the framework of socialist enterprises served as one of the practical forms of a gradual development of collectivist standards among former individual peasants.

Today the above-said need for personal auxiliary holdings has almost vanished. Most collective farmers are persons who have grown up within the context of collective ways of living and of working and find it difficult to conceive life on an isolated personal holding. While both industrial workers and the rural intelligentsia often have personal auxiliary plots, they represent social groups who by the very nature of their functions have never been associated with private property and, therefore, cannot embody the dualistic nature of former individual peasants.

There is a fundamental difference between the personal auxiliary plots of collective farm members and the private property of a small commodity producer. When bourgeois specialists on Soviet agriculture apply the term "private sector" to the personal auxiliary plots of members of collective farms, they associate the inherent properties of an individual peasant with that conception rather than the actual social environment within which he works. Small-scale private farming exists in all socioeconomic formations preceding socialism and also existed in the USSR before the collectivisation of agriculture.

The personal auxiliary plots of collective farm members appeared together with socialist forms of organising economic activities in the countryside. The persons who work on these plots are workers of socialist enterprises rather than individual commodity producers as in a private economy. The labour of members of collective farms and of state farm workers on personal auxiliary plots is not a private entrepreneurial activity. It is rather a form of social labour whose current function is to serve those needs of the country for specific agricultural products that cannot yet be fully met. Far from being the opposite of social forms of production, personal auxiliary holdings constitute an activity that both complements social production and is also based on its existence.

Individual peasants carry out their economic activities outside the framework of social production and view them as their sole source of income and of food. Their households were established through processes that are governed by the laws of small-scale capitalist production and continue to function according to these laws. In contrast to this, personal auxiliary holdings are governed by altogether different laws. Their character is different and they carry out different functions. For collective farmers or workers on state farms participation

in social production is a prerequisite for their activities on their personal auxiliary holdings. Far from being their principal source of income, moreover, their incomes from these holdings merely form an auxiliary source of income. Hired labour is not employed on personal auxiliary plots. In contrast to the individual farm owner who contributes his entire labour into his own household, the collective farmer can only contribute a modest part of his labour to his personal auxiliary plot. It is, therefore, not possible to represent him as a two-faced Janus, who is a socialist worker, on one side, and a small-scale private producer, on the other.

The size and function of personal auxiliary plots depend directly on the development of collective-cooperative forms of property. The collective farm's social economy and the personal auxiliary plots of collective farm members are just as interdependent as are the state form of ownership with co-operative ownership. In the case of collective farms in the USSR it is the families of collective farm members who are entitled to a personal auxiliary plot. Moreover, this right is given to the entire family viewed as a single unit. One should not confuse the concept of a "collective farm household" with that of a "peasant household". While the latter is based on private ownership, the essential nature of a collective farm household is altogether different. It is the association of the collective farmer's personal auxiliary holding with the social economy of the collective farm and its dependence on the latter that constitutes the basis of a collective farm household and forms its distinguishing characteristic. Without collective farms there can be neither collective farm households nor auxiliary farming plots.

The personal auxiliary plots of collective farm members are established on collective farm land. Access to grazing land, veterinary services, fodder for personally owned cattle, means of transportation for delivering

fodder and for marketing a part of the output on collective farm markets as well as assistance in acquiring cattle are all provided to collective farm members by their social economy. As a rule, the land of personal auxiliary holdings is ploughed by tractors, horses, and ploughs belonging to the collective farm. Collective farms have a right to alter the size of personal auxiliary holdings and to assume responsibility for the needs of collective farm members for food, provided that this is made possible by their economic capacity and that collective farm members insist on this.

The personal auxiliary plots' principal means of production, namely, land, is provided to Soviet citizens by the state. According to the provisions of the Model Rules, which are currently in force, the land area of a personal auxiliary plot on a collective farm may be as large as 0.5 hectares. The size of the plots of industrial and office workers residing in rural communities is defined by the laws of the particular republic in which they live. In the Russian Federation, for example, state farm workers and employees may use 0.3 hectares in their personal auxiliary holdings and depending on local conditions this may be increased to 0.5 hectares.

At the present time a collective farm household may also own a cow and its calf (if it is less than one year old), one more large animal not more than two years old, one sow with its offspring (below the age of three months) or else two pigs being fattened, up to ten sheep and goats, beehives, poultry, and rabbits. The new Model Rules provide that under special local conditions the Council of Ministers of a Union republic may increase the number of animals that are the personal property of collective farm members or else replace some types of animals by others. The animals and poultry belonging to collective farmers, industrial and office workers as well as their houses and other buildings, their fruit-trees and

other plants may be freely sold to other owners. The above-mentioned normative quantities for personal auxiliary holdings do not imply that they serve to limit the further expansion of these households. Very often collective farm members do not fully employ their capacity for auxiliary farming activities. Towards the end of the 1960s, for example, the average collective farm household actually cultivated less than 0.3 hectares of land (at a norm of 0.5), owned some 0.9 head of cattle, and 0.5 pigs. This was a time, moreover, when the government sought to encourage the further development of personal auxiliary farming in all possible ways.

In their actual running the personal and the social economy of collective and state farms are closely interrelated. Each year, for example, young animals that are sold by personal farming households are generally bought by the farm's social economy for subsequent fattening. Similarly, collective and state farms often purchase seed for vegetable crops from personal auxiliary holdings. For their part, collective farmers, industrial and office workers generally purchase fodder, chicks, and piglets from collective and state farms. It has been estimated that only 30 per cent of the fodder needed for personally owned animals is produced on personal auxiliary plots, while the remaining 70 per cent are purchased from the social economy.

Similarly, the work of collective farmers and state farm workers and employees in personal production is closely interrelated with their work in social production. No matter how it is divided between these two types of productive activities, the overall duration of the working day of rural workers does not change. At the same time labour expenditures on a family's personal auxiliary plot depend on the level of development of the social economy and on the magnitude of the income that it yields. In particular, statistical samples indicate that in the Russian Federation approximately 30 per cent of all

labour activities of collective farmers in 1969 were contributed to personal auxiliary plots.

Statistical data also show that while the overwhelming majority of persons engaged in the social economy are persons of working age, only one-half of such persons are engaged in work on personal family plots. What is more, over 90 per cent of the able-bodied persons fully engaged in working on personal plots are women. At the present time activities on personal farming households largely depend on the labour of retired persons, housewives, and juveniles. As payments for labour within the social economy increase, persons of working age find it increasingly disadvantageous to work on personal farming plots.

The composition of labour expenditures on personal farming plots has also been changing. While in the mid-1920s more than one-half of the labour expenditure of the farmer's household was devoted to the cultivation of plants, today over 75 per cent of the labour of collective farmers is devoted to the raising of animals. At one time individual households found it necessary to almost duplicate the output structure of collective farms. Today, as we have seen, the personal auxiliary plots of collective farmers largely specialise in producing those products that are still in short supply in the country, namely, products of animal farming and of vegetable farming. This kind of "division of labour" between the social and the personal economy expresses their interdependence in the process of their development.

In describing the role of personal auxiliary holdings in the USSR's economy it is important to estimate correctly not merely its significance as one of the sources of food for the families of agricultural workers, but also its contribution to the needs of the urban population for agricultural products. Table 6 shows that the importance of personal auxiliary holdings in this regard varied substantially during the different stages of

their development. In particular, it shows their share in the output that has been sold through all marketing channels by all agricultural producers.

Table 6

Relative Share of Personal Auxiliary Holdings in the Marketable Share of Agricultural Production in the USSR (per cent)

	1940	1950	1960	1975
In all commodity production	27	24	15	12
In all marketable products of land cultivation	13	14	11	10
including:				
grain	3	2	—	—
raw cotton	—	—	—	—
sugar-beet	6	—	—	—
potatoes	54	61	51	37
vegetables	18	24	14	13
In all marketable products of animal husbandry	54	43	19	14
including:				
meat	55	47	20	17
milk	51	50	10	5
eggs	93	74	54	9
wool	26	16	15	18

These data show that at the present time the role of the personal farming plots of collective farmers, industrial and office workers in the overall supply of agricultural products is only an auxiliary one. While in 1940 they were the main suppliers of potatoes, meat, milk, and eggs, their share of each of these products today is not more than 50 per cent. The significance of personal auxiliary holdings is gradually declining both in terms of overall agricultural production and for each type of agricultural product individually. This is not occurring because the absolute volume of their output is declining, but rather because the role of social production in meeting the country's needs for food products and agricultural raw materials has been increasing sharply.

To a large extent the social importance of personal auxiliary plots at individual stages of the country's economic development determined and continues to determine its contribution to the income of Soviet farmers. During the initial stage of development of collective and state farms personal auxiliary plots contributed a relatively large share of the overall incomes of farm workers. But as the social sector developed and gained in strength and as the payment of collective farmers and state farm workers and employees increased, the role of personal auxiliary holdings as a source of revenue was reduced. More specifically, it has been estimated that their share in the overall income of collective farmers has declined by more than 60 per cent since the time when collective farms first appeared. Today their contribution to the incomes of rural workers is wholly subsidiary.

Such changes in the composition of farmers' incomes were particularly rapid after the war. While in 1940 the share of the personal farming plots of collective farmers was almost one-half of their total income, today it is less than a third. In the case of state farms that indicator declined from one-fourth to one-fifth of their income. These figures show that as the development of a farm's economy increases and as its material and technical infrastructure develops, the share of personal auxiliary plots within the overall incomes of agricultural workers declines.

Let us consider, for instance, the Sverdlov Collective Farm in the Rudnya District, Smolensk Region. One no longer finds among its members the former uniformity of views concerning personal farming plots. There was a time when these plots produced nearly all the products on the collective farmer's table and when incomes from the sale of a part of these products constituted nearly one-half of a family's overall income. But in recent years the average family receives 2,500-2,700 rubles per year from the collective farm's social economy and only

250-300 rubles from the marketable share of their personal holdings. Accordingly, collective farm members are beginning to place a greater value on the time that they contribute to social production as well as on their free time, when instead of working on their personal farming plots they are able to watch television, go to the movie theatre, or else engage in sports.

Particularly among the young an increasing number of collective farm members are beginning to view personal auxiliary holdings as a source of personal satisfaction from growing modest gardens and orchards rather than as a source of additional income. At the same time the collective and state farms themselves are seeking to help as much as possible in reducing the labour of their workers on their personal farming plots. Thus, the expected duration of that economy's existence and its contribution to production depends entirely on the level of development of productive forces within the social economy. In spite of the significance of personal auxiliary plots at the present time, they will gradually vanish in the long run as social production continues to develop.

The CPSU's Programme states: "At a certain point the collective production at kolkhozes will achieve a level at which it will fully satisfy members' requirements. On this basis, supplementary individual farming will gradually become economically unnecessary. When collective production at the kolkhozes is able to replace in full production on the supplementary individual plots of the kolkhoz members, when the collective farmers see for themselves that their supplementary individual farming is unprofitable, they will give it up of their own accord." A basically similar approach is characteristic of the further development of the personal farming plots of industrial and office workers. But at the same time the Communist Party opposes any haste or artificial forcing of these processes and skipping over particular stages of their development. The course of development

that Communists envisage is a voluntary, gradual and economically justified reduction in the role of personal auxiliary holdings and their subsequent transformation into flower gardens and places of rest for the rural population.

6. THE ORGANISATION OF SUPPLY AND MARKETING

Economic planning provides one of the most important advantages of the Soviet type of agricultural development. Under capitalism the existence of a farm depends entirely on the current state of markets. The farmer never knows precisely the price at which he will be able to sell his output, the identity of his eventual client, the quantity of output that he will succeed in selling, nor the prices that he will pay for fertilisers, equipment, and fodder, and the risk of economic failure constantly hangs over his head. Because capitalist society is based on a striving for profits at the expense of others, on a private ownership of the means of production, and on an exploitation of hired labour, it cannot operate as a planned economy. Market relationships operate through the mechanism of fluctuating prices and produce an uncontrollable competition among commodity producers as well as an anarchy in production, and economic crises. They also produce unemployment and hunger for millions of working people.

The United States provides a particularly striking example of these characteristics. Behind an external veil of prosperity and wealth there exist millions of destitute Americans. Nearly every seventh person lives in poverty and almost every fourth person is insufficiently provided in his livelihood. In many regions of the South there are hundreds of thousands of American Negroes, Mexicans, Puerto Ricans, and Indians, who are continually suffer-

ing from poverty, hunger, and need. According to the 1970 population census, 32 per cent of the Negroes and 45 per cent of the Puerto Ricans living in New York receive incomes below the official poverty level. At the present time 17.1 million Americans, who represent 8 per cent of the country's population, find it necessary to turn to the government for assistance because of poverty, and for special coupons that make it possible to meet minimal food requirements at reduced prices. And this is happening in a situation in which the operating potential of American agriculture is currently the highest in the world. It has been estimated that its output could feed 1,500 million residents of Asia at currently existing levels of food consumption there. Bourgeois economists have estimated that in the Common Market countries of Western Europe the standard of living of approximately ten million persons is below the poverty line or else close to it. Approximately 76 million persons live in these countries in regions that are recognised as "lagging" or even as "centres of poverty". It is difficult not to recall in this connection Lenin's prophetic words to the effect that "at best" a bourgeois government "can give the people 'brilliantly organised famine'".¹

The existence of anarchy in production and in market processes produces poverty among a large number of working people, on the one hand, and so-called surpluses in food together with an irrational use of the most important means of producing it, on the other. Each year in the United States 1.3 million tons of fertilisers are employed to grow lawns and golf courses and for similar uses. This would be sufficient to produce a quantity of grain that would make it possible to feed 65 million residents of developing countries. In recent years, according to the American journal *Feedstuffs*,² the volume of wheat that

¹ V. I. Lenin, *Collected Works*, Vol. 23, p. 306.

² *Feedstuffs*, No. 42, N-SE, 1970, p. 2.

is fed to cattle had doubled and in 1969-1970 represented more than 25 per cent of its overall use within the country. In 1972-1973, 7.7 million tons of wheat were denatured (subjected to chemicals that make it unfit for consumption) in the countries of the Common Market. In 1971 alone some DM3,000 million were spent there on the destruction of "agricultural surpluses", while in 1973, DM14,000 million were spent on all forms of their "utilisation" (denaturing, feeding of cattle, storage of reserves, subsidies). Millions of persons who died of hunger could have been saved during those years by the food that was destroyed in this way.

Socialism overcomes the uncontrolled nature of market processes, anarchy in production, and the unstable competitive environment of farms. These advantages of socialism were particularly evident in the early 1970s at a time of an energy and a monetary crisis, uncontrollable inflation, growth in prices, and unemployment. At that time the well-known American economist John Kenneth Galbraith recognised that prices are stable in communist countries and so are currencies, and this makes it possible for them to cause the free world to blush. And it is true that while retail prices for food products have grown by 40 per cent between 1968 and 1973 in the United States, in the USSR their level in 1973 was practically the same as in 1965. In 1974 alone retail food prices again jumped by 20 per cent in the United States, while in the USSR food prices did not increase.

Neither Soviet farmers nor other Soviet citizens experience anxiety about what the next day will bring. The state provides free of charge the land that farmers need for their production activities, unlike in the United States, where the price of land has increased several times during the post-war years. It also establishes firm prices on tractors, agricultural equipment, automobiles, fertilisers, and other means of production, and regulates their level only occasionally and in a planned manner in the

light of changes in the expenditures that are associated with their production. In contrast to this the prices of the goods and services that farmers purchase in the United States have increased by three times during the post-war years. The state guarantees the wholesale marketing of collective farm and state farm output at prices that cover production expenses and make possible further increases in production. Each state farm and collective farm that possess equal rights represent an element of an overall economic mechanism operating according to a common plan that places equal obligations on all.

It has already been noted that following the reorganisation of the MTSs in 1958 their equipment was sold to collective and state farms.

Currently a special organisation named Soyuzselkhoztekhnika is carrying out studies of their requirements for material and technical means. Its enterprises also provide most forms of repair of agricultural equipment. This is an all-Union organisation possessing a large network of local enterprises and agencies that sell machines, transportation equipment, spare parts, mineral fertilisers, building materials and construction machinery to state and collective farms, service and repair their agricultural equipment, and also provide them with a large number of other production services (such as the transportation of freight, construction services, the installation of equipment, road construction services, assembly operations, and certain types of land improvement activities).

Soyuzselkhoztekhnika possesses more than 3.6 thousand district offices, 570 independent supply centres and shops, approximately 330 industrial enterprises, over 4,000 repair centres, 4,800 centres of trucking services, and many other enterprises. It also possesses over 18,400 various warehouses whose overall capacity is more than 13 million tons. The list of material and technical means that it supplies to collective and state farms includes more than

72,000 items. Its average yearly turnover in recent years is valued at 14,000-15,000 million rubles. In 1974 its assembly activities exceeded a level of 1,000 million rubles. This refers to the installation and adjusting of animal farming equipment and the assembly of inter-farm plants for producing complex fodders as well as of poultry farms.

In preparing its plans for the forthcoming period each collective or state farm places an order with the local branch of Soyuzselkhoztekhnika for the machines, materials, mineral fertilisers, equipment, and other means of production that it requires. The local branches then prepare aggregated orders or consolidated lists of required materials and technical means, as they are called, and forward them to agencies at the next level. Following a co-ordination of its own aggregated requirements with the USSR Ministry of Agriculture, Soyuzselkhoztekhnika itself forwards them to the USSR State Planning Committee (Gosplan), where a material balancing of the production and distribution of agricultural means of production is carried out. The resource part of this balance-sheet constitutes a plan for the production of specific types of output by individual producing organisations. It includes means of production to be imported from other countries. The remaining (distribution) part of the balance-sheet lists the materials that are required by consumer organisations for production purposes as well as stocks for sale, export requirements, and reserves. A plan for distributing output among the order-placing organisations is then developed on that basis.

The production balance-sheet represents a component element of the government's general plan of economic development. After that plan has been approved, both Soyuzselkhoztekhnika and its local branches are able to know the dates on which particular factories are scheduled to deliver new equipment and other means of production. In return for a specific payment local agencies are

then able to deliver such equipment, fertilisers, etc., to collective and state farms either through their own warehouses or else directly. Agricultural enterprises know in advance the prices of all means of production and of the services of Soyuzselkhoztekhnika and set aside the necessary funds.

The distribution and production activities of individual branches of Soyuzselkhoztekhnika are based on the principle of self-financing operations. In addition, that agency is responsible for testing new types of equipment. Special councils exist in all its branches that include representatives of collective and state farms, industrial enterprises, and agricultural agencies as well as of the branches of that organisation themselves.

As the material and technical infrastructure of agriculture develops, and as the equipment that is received by collective and state farms becomes more complex, services for repairing that equipment become increasingly important. Following the reorganisation of the machine and tractor stations, major repairs of combines, tractors and automobiles have been largely concentrated at enterprises of Soyuzselkhoztekhnika. At the same time repair shops for minor activities or services are established within the collective or state farms themselves. In recent years modern repair facilities fitted out with production lines and the most modern equipment have been established within the Soyuzselkhoztekhnika system. The modernisation of existing plants and repair centres and shops as well as the construction of new ones between 1961 and 1973 has increased the production capacity of Soyuzselkhoztekhnika by 80 per cent. Standardised repair shops have been established on 25 per cent of the collective farms and 47 per cent of the state farms. Some 15,000 centres have also been established for providing technical services.

Current repairs are concerned with maintaining equipment in operating conditions. Their function largely

concerns the replacement or repair of individual simple parts and an overcoming of minor defects that may arise during the machine's operation. Capital repair services, on the other hand, relate to the restoration of the equipment's original properties, and they also guarantee its operation over a specified length of time. At the present time three-quarters of all capital repairs of tractors, over 70 per cent of the capital repairs of automobiles, and over 50 per cent of such repairs on grain-harvesting combines are carried out at enterprises associated with Soyuzselkhoztekhnika. Such repairs are carried out much more effectively than in the repair shops of collective and state farms, and the subsequent time of operation without repairs has increased by 50-80 per cent at the same time that the repair expenditures have declined substantially.

In recent years planned prophylactic measures bearing on the servicing of collective and state farm equipment are being applied on an increasing scale. This represents a combination of measures relating to servicing with anticipatory repair activities. It results both in an improvement in the equipment's general state and an increase in its reliability and in the quality of work on farms and in the fields, and in a reduction in expenditures for spare parts. Leading economic organisations rely increasingly on complex approaches to the technical servicing of equipment that include repairs, storage, the linking of individual equipment into larger units and their general preparation for work.

The country's agro-chemical services are also playing an increasing role in the activities of collective and state farms. This encompasses more than mere deliveries of mineral fertilisers, improvements in their assortment and quality, and a wide programme of land improvement activities. It also includes activities concerned with increasing the effectiveness of such measures in improving agricultural production. There have been substantial improvements in the quality of such services in recent years.

In particular, 203 regional agro-chemical laboratories have been established in major agricultural regions that govern fertility and other agro-chemical indicators on 327 million hectares. All collective and state farms have received agro-chemical maps and recommendations relating to the use of fertilisers and other chemical substances. Analyses of the quality of fertilisers have been introduced on a large scale together with analyses of residual quantities of poisonous chemicals in the soil and many other activities relating to the improvement of the soil's fertility.

Over 800 local chemical service centres have already been established in the country. Those that were created in the Ust-Labinskaya District of the Krasnodar Territory were among the first. Fertiliser-mixing facilities were established there and the utilisation of new equipment for applying fertilisers conformed to the advice of agro-chemical services. In Moldavia, Turkmenia, and Tajikistan, inter-farm centres of agro-chemical services are being established on a planned basis. Similar centres are widely employed in the Ukraine, Byelorussia, and other republics. It will not be long before a unified service relating to the use of chemicals in agriculture will be established in each of the country's districts. This will include agro-chemical centres together with warehouses, transportation facilities, laboratories, and mechanised teams that will assure a correct utilisation of fertilisers.

The government has also organised a broad system for making credit available to collective and state farms on easy terms. This refers to two types of credit, namely, short-term credit for servicing the enterprises' circulating means of production, and long-term credit which is primarily employed for acquiring basic means of production. Both types of credit are made available by the State Bank of the USSR. The following data convey the scale on which such credit has recently been available to agriculture. As of the end of 1940 the balance of loans of the country's

agriculture as a whole was approximately 200 million rubles. This increased to 574 million rubles at the end of 1950, nearly 3,000 million rubles in 1960, and 25,500 million rubles at the end of 1975. In other words, the volume of such short-term credits has increased by more than 8.5 times during the past 15 years. Both collective and state farms are charged a rate of interest of 1 per cent per year for short-term credit. In the United States commercial banks charge 5 to 6 per cent for similar services.

Long-term loans have also developed very substantially in agriculture. While in 1940 only 87.3 million rubles were lent to meet the production needs of collective farms, this figure grew to approximately 300 million rubles in 1950, over 620 million rubles in 1960, and 3,294 million rubles in 1975. Thus, long-term loans have increased over five times during the past 15 years. Such loans are made available to collective farms for the erection of structures for sheltering animals and the mechanisation of farms, the construction of water utilities, of residential houses and recreation and welfare facilities, for purchasing equipment and cattle, and for other needs. Such loans are given for periods of time ranging from eight years in the case of purchases of tractors to 20 years for the construction of modern animal farms.

Beginning in the second half of the 1960s, when a transition of state farms was effected to a self-financing basis, long-term loans began to be employed by state farms as well. Between 1970 and 1975 the corresponding indebtedness of state farms increased from 400 million rubles to 5,000 million rubles, i.e., by 12.5 times. Long-term loans are also given to individual members of the rural population, primarily for the construction of houses. In 1940 they amounted to 74 million rubles, while in 1975 this figure rose to 453 million rubles. Collective and state farms pay a rate of interest of 0.75 per cent per year to the State Bank of the USSR when such payments are made on time,

and 3 per cent per year for late payments. In the United States insurance companies charge farmers 5-6 per cent for long-term credit.

Socialism has succeeded in overcoming uncertainty as regards material and technical supplies and financial resources for agriculture and also as regards the marketing of its output.

The government itself is the principal wholesale purchaser of the output, and the use of guaranteed purchases of the output of collective and state farms at fixed prices fully eliminates the risk of losses attributable to unexpected fluctuations in prices. This creates a stable basis for the further expansion of output. The existence of firm purchase prices makes it possible for each agricultural enterprise to plan its output in such a way as to take the fullest possible advantage of its specific natural and economic environment.

Different forms of effecting agricultural deliveries existed at different stages of the socialist reorganisation of the countryside in the USSR. We have already mentioned the surplus appropriation system and tax in kind as the forms of farm produce procurement in the early years of Soviet power. The tax in kind was abolished in 1924 as purchases of agricultural products were assigned to state and co-operative organisations. These either purchased such goods directly from farmers or else signed contracts with them for the output of particular products. In 1932-1933 obligatory deliveries of farm produce to the government at firm prices were introduced, together with payments in kind for the services of machine and tractor stations provided to collective farms. The contracting method continued to be employed only with regard to industrial crops. It was also at that time that the free marketing of agricultural products on collective farm markets was introduced (after the meeting of obligatory deliveries and the payments in kind to the MTS) as well as state and co-operative purchases of remaining

agricultural products at increased prices from both collective farms and individual farmers. As for the state farms, their output was procured by the government by way of planned deliveries for which specified delivery prices were paid.

That complex system of agricultural deliveries was reviewed in 1958. At that time the government began to purchase agricultural products exclusively on the basis of contracts, that is, on the basis of agreements with collective and state farms. In 1965 the system of agricultural deliveries was analysed once again and improved considerably by such measures as new procedures for the planning of agricultural purchases and adjustments in prices.

The currently employed forms of agricultural commodity deliveries may be divided into two groups, namely, centralised deliveries, which are carried out by the government, and non-centralised. The former prevail and play a leading role. They make possible the creation of a firm national stock of agricultural products which receives 86 to 88 per cent of all agricultural commodity production. Since 1965 centralised purchases have been effected in two ways: through a firm plan, or else through purchases of farm produce over and above the plan. The price that is paid for the latter is 1.5 times as high.

All state purchases (whether planned or in excess of planned commitments) are carried out in the form of contracts in which all conditions pertaining to deliveries are specified. By entering into such a contract the collective or state farm receives a firm guarantee that its output will be sold. The purchaser, for his part, is able to prepare in advance the needed warehouses, equipment, and refrigeration capacities. Each purchasing organisation enters into separate five-year contracts subdivided into one-year periods. This must be done before the 1st of January of the corresponding year.

Under the terms of such a contract the collective or

state farm commits itself to deliver to the purchaser a specified quantity of agricultural products, whose types, quality, and assortment are also indicated. The contract also specifies dates and points of deliveries. Purchasing organisations undertake to accept the output within specified dates and to pay for it in the established manner. Whenever necessary, purchasing organisations also undertake to assist collective and state farms in organising production and in transporting output to delivery points. An important part of such contracts concerns the terms of mutual compensation for failing to meet the obligations assumed.

In recent years direct relationships among collective and state farms, on the one hand, and industrial or distribution enterprises, on the other, have been developing rapidly. Many of the farms that are located near urban centres deliver such perishable products as milk and vegetables, and also potatoes, directly to stores, dining rooms, restaurants, and hospitals, thus bypassing the delivery points of dairy factories and wholesale vegetable warehouses. Direct relationships are also developing between agricultural enterprises and meat-packing houses, sugar refineries, canneries, and other food-processing factories. This reduces the time that is needed to reach consumers, conserves quality, and reduces considerably losses due to spoilage. As a result, consumers receive better-quality and fresher products, while farms are paid retail prices (less the fixed rebate) rather than wholesale purchasing prices.

State purchasing organisations are not the only purchasers of farm produce. Agricultural producers dispose of a part of their commodity output (approximately 12-14 per cent) through non-centralised forms of marketing. This includes collective farm markets, sales to consumer co-operatives on the basis of commissions (including a share for the co-operatives themselves)—the so-called trade on a commission basis, non-centralised

deliveries to various government organisations (hospitals, restaurants, dining rooms, and kindergartens) and internal collective farm markets (village markets). These types of deliveries are characterised by three features, namely:

—they do not enter into the centralised government stocks;

—they do not represent large-scale wholesale activities;

—the corresponding prices are established by mutual agreement between sellers and purchasers rather than by the government.

It has already been noted that as a form of marketing agricultural produce collective farm markets emerged in the early 1930s. Collective farmers and industrial and office workers, who work on their personal farming plots, are able to sell their products at prices that are established on such markets. Turnover on collective farm markets was 2,900 million rubles in 1940, and this figure increased to 3,700 million rubles in 1960 and 6,400 million rubles in 1975. Yet despite that increase in the volume of sales on collective farm markets, both collective and state farms have been turning to them less frequently in recent years. This is because the government's purchasing prices for output in excess of planned commitments (which are 50 per cent higher) often hardly differ from collective farm prices.

There exists still another channel for marketing agricultural produce that has developed in recent years. This is the internal village market. The producers themselves are both its purchasers and sellers. Frequently collective and state farms sell their output to their own workers at reduced prices, and also deliver agricultural products to dining rooms under their own jurisdiction either at cost or at reduced prices. The volume of sales on internal village markets is nearly one-half of sales on collective farm extra-village markets.

The forms of disposal of farm produce thus create firm marketing possibilities and also make it possible to combine centralised and non-centralised delivery channels. Farmers do not feel constrained by any one type of marketing of their output and their selection of particular types will depend on local conditions. The government for its part, far from forbidding decentralised marketing channels, seeks to encourage their development. In particular, modern marketing facilities have been and continue to be constructed in the cities that are convenient to traders. Their administrative bodies arrange for the transportation of the products brought for sale and provide hostel facilities for the farmers as well as necessary equipment.

Such a planned system for organising production and distribution makes possible a continuous growth in agricultural incomes. In particular, whenever production expenditures for a particular product turn out to be consistently higher than its purchasing price, the government reviews the latter accordingly. The purchasing prices for most agricultural products have been increased repeatedly in recent years. And as a result of both growing output and increases in purchasing prices, the value of government payments to collective farms, state farms, and the population has increased from 33,300 million rubles in 1965 to 66,100 million rubles in 1975, i.e., it has nearly doubled. During these years the gross income of collective farms, i.e., their money revenue minus material and monetary expenditures, has increased from 16,500 million rubles to 22,300 million rubles. Both collective and state farms are now fully paying enterprises.

The systems of supplying the means of production that collective and state farms require and of marketing their output provide a basis for the planned interconnection between farms and the overall economic organism. The fact that socialism makes possible the development of all sectors of the economy in accordance with a common plan

constitutes one of its major advantages. Any economy represents a complex of closely interrelated sectors and enterprises that are linked with each other through their production activities. It is in such a context that each enterprise produces a specific type of output such as machines in the case of the engineering plants, mineral fertilisers in the case of some chemical plants, electrical energy in the case of power stations, fuel in the case of oil refineries, and food in the case of agricultural enterprises.

Because under capitalism each owner of means of production pursues only his personal interests these relationships among enterprises are then established in an unregulated manner. The objective of capitalist production is profits, and neither the capitalist nor the farmer know how much output society in fact requires. Each one assumes individually the risks that are associated with particular decisions. Often such a striving to obtain the largest possible profit produces the agricultural "surpluses" that were mentioned at the beginning of this chapter.

Soviet people are unacquainted with such a form of economic development. Each of the country's numerous socialist enterprises produces as much as is indicated by society. Both the mutual co-ordination of their work and the determination of society's needs for particular types of products, as well as the specification of the sources from which to meet them, are all effected according to a plan. Socialist planning is concerned with the establishment of government assignments to all sectors and enterprises on the basis of scientific principles. Its principal task in the case of agriculture is to specify assignments to collective and state farms as regards produce for sale to the government and to ensure their fulfilment.

It is, of course, not very difficult to calculate the volume of agricultural products that society will need. This merely requires that the rational norms of agricultural

product consumption of the average person (which are established by science) be multiplied by the country's population. But that is insufficient. For it is also necessary to know precisely the existing productive capacities of farms and to assign specific tasks to each of them that correspond to these capacities.

Currently agricultural planning is organised in the following way. Collective and state farms are not given specific assignments for sowing particular crops or raising specified numbers of cattle. Instead in the case of collective farms the government specifies the following indicators: 1) the volume of basic agricultural products that it wishes to purchase; 2) deliveries to collective farms of machinery, equipment, fertilisers and other means of production; 3) the volume of credit facilities. The first of these indicators thus represents a plan for produce sales, which constitutes an obligation of the collective farm to the government, while the other two represent the obligations of the government to collective farms. Subsequently it is the collective farmers themselves who determine the size of land devoted to particular types of crops, the number of cattle, and other indicators in accordance with their own planning procedures.

In the case of state farms, the government specifies four more indicators: 1) their overall wages fund; 2) their overall volume of profits, their subsidies from the budget, and their payments for basic productive assets; 3) their volume of centralised capital investments; 4) assignments for the introduction of new technological processes and means of complex mechanisation. The remaining planned indicators are worked out and approved by the state farms themselves.

The preparation of centralised planned assignments to collective farms for their sale of agricultural products to the government is a complex process involving thousands of persons, including scientists, experts, executives,

and general state farm and collective farm personnel. Proposals and draft assignments are discussed at general meetings of collective farms. Specialised planning bodies (the USSR State Planning Committee and its local bodies) consider innovations suggested by recent experience. On the basis of a comprehensive economic analysis covering a number of years, consideration of the soil and weather conditions and studies of the specialisation of a given farm the planning bodies define specific planned assignments at levels that will cause all collective and state farms to work with an equal degree of intensity.

After receiving a planned assignment for commodity output, agricultural enterprises begin to plan their own production. In doing this they also take into account their need to sell some output over and above the plan, both to the government and through other marketing channels. They first take into account their own internal requirements for their own output. Plans are, as a rule, drawn up both for the long term (for periods of 5, 10, 15, 20 years), for current activities (for the given year) and for working periods (operational plans). Each such plan is closely co-ordinated with others. It is impossible to develop current plans without considering the farm's long-term development. Similarly, it is impossible to draw up long-term plans without considering the results already achieved.

Long-term planning is concerned with solving major socio-economic problems facing collective and state farms, and also with the further development of their specialisation, the revealing of internal possibilities for additional production, and the identification of ways for intensifying and increasing the efficiency of production. The major economic tasks confronting farms today include producing the maximum volume of output per hectare and per unit of expended labour, reducing the cost of products, improving the quality of output, and increasing the profitability of output.

Long-term plans are concerned with the rational utilisation of land, the creation of adequate sources of fodder, the specialisation of farms and the finding of correct proportions among individual sectors, the introduction of complex mechanisation of production processes, capital construction, and the solution of major socio-economic problems. Within such long-term plans each indicator reflects a specific set of measures that has been selected to carry them out. Within the farms' current production and financial plans such long-term plan indicators are then made more specific. These relate to programmes of activities for a given economic year; team leaders, section leaders, and rank-and-file collective farmers and state farm workers participate actively in preparing such production and financial plans.

Because well-balanced solutions to fundamental problems require the joint efforts of many sectors of the economy, the principle of complex planning plays an important role at the current stage of development, particularly in the case of long-term plans. In planning the development of agriculture it is also necessary to take into account the entire complex of factors on which such a development depends. This includes the supply of equipment and mineral fertilisers, the expansion of capital construction (production buildings, housing and service premises), land improvement activities, the training of personnel, and the balanced development of adjoining sectors of the economy.

Among the many examples of such a complex approach that already exist in the country's agricultural planning practice, one may cite the programme for increasing the output and purchases of long-fibre flax, including measures for improving its quality and for developing the industrial facilities that its primary processing requires. Russian flax is called "the silk of the North", and no other country in the world is able to match the USSR's possibilities for producing this very ancient and very

valuable agricultural crop for which there is a large demand on world markets.

Because of the importance of the further development of its output the Communist Party and the Soviet Government adopted a comprehensively thought-out and complex programme. This provides for the matching of output assignments to the country's collective and state farms over a long-term period with the capital investments and material funds that will be needed for that sector's complex mechanisation through a large-scale use of electric energy. It also includes measures for conducting scientific studies with a view to searching for means needed to improve both crop yields and quality indicators. It specifies the measures to train new specialists in flax production and flax processing, and sets aside the material and monetary resources for a substantial development of the flax-processing industry and for labour incentive funds; purchasing prices have also been raised. In that particular case all necessary details have been taken into consideration for the unimpeded and all-round development of the production of flax fibre and articles out of it. This principle of working out concrete comprehensive programmes finds ever wider application in the work of planning and managerial bodies.

7. SCIENCE-BASED FARMING

An important characteristic of the work of collective and state farms at the current stage is a continued growth in the contribution of science to their development. In an increasing measure science is becoming a direct productive force in the USSR's agriculture. It is difficult to find an area of operations of these enterprises in which agricultural science does not actively participate. A new scientifically based system of agricultural management is replacing the traditional organisation of production and

of everyday life in the countryside that has emerged over centuries.

The socialist character of the agricultural enterprises themselves in conjunction with up-to-date machinery, modern varieties of crops and breeds of cattle, and effective mineral fertilisers and insecticides are bringing about a radical restructuring of the technology of production processes as well as of the organisation of labour. The growing efficiency of social production characteristic of the country's agriculture is in large measure due to the scientific and technological progress achieved in that sector of the economy in recent years. Engels' words to the effect that "the productivity of the soil can be increased *ad infinitum* by the application of capital, labour and science"¹ have been fully confirmed by the experience of recent years.

In the USSR it is the Ministry of Agriculture that is responsible for agricultural research and the management of corresponding research institutions, for organising higher and secondary agricultural education, and for introducing a scientific system of measures for land cultivation and livestock raising. In particular, the activities of the Lenin All-Union Academy of Agricultural Sciences are sponsored by that Ministry. The Academy encompasses over 250 institutes, organisations, and experimental stations whose scientific personnel numbers 8,200 persons. For the country as a whole the number of agricultural scientific personnel is 37,300 persons.

Important achievements have been recorded by agricultural science during the years of Soviet power. Over the past ten years alone more than 600 new varieties and hybrid forms of agricultural plants have been produced as well as more than 20 new species of animals and birds. The variety of winter wheat called Bezostaya-1, that was

¹ Karl Marx and Frederick Engels, *Collected Works*, Vol. 3, Moscow, 1975, p. 436.

developed by Academician P. P. Lukyanenko, is now known throughout the world. In the USSR that variety is employed on areas covering eight million hectares and produces an additional output that attains 14 centners per hectare. As a result, as much as three million additional tons of grain are obtained each year. On better farms Bezostaya-1 yields as much as 50-60 centners per hectare, while its record yield is 94.6 centners per hectare on an area of 12 hectares. This was obtained in 1971 by the Krupskaya Collective Farm in the Gaivoron District, Kirovograd Region. In a report to the European Plant-Breeding Congress (1971) concerning international experiments with winter wheat a group of American scientists (V. Johnson, J. Schmidt, and P. Mattern) noted that experiments carried out in 1969-1970 showed Bezostaya-1 to be the world's best variety of that genotype for all regions in which winter wheat is produced. In particular, it was emphasised that its yield is relatively stable in the most diverse environmental conditions.

Science, however, does not stand still and it was no accident that N. I. Vavilov, leading Soviet biologist, first President of the All-Union Academy of Agricultural Sciences, defined plant breeding as experimental evolution. Today varieties of winter wheat are being introduced that give even higher yields (Kavkaz and Avrora). In 1971 they harvested 61.5 centners of grain per hectare on the Kuban Collective Farm in the Ust-Labinskaya District, Krasnodar Territory, from an area of 4,600 hectares. In particular, the team led by M. I. Klepikov, Hero of Socialist Labour, obtained 66.4 centners of grain of the Avrora variety per hectare. The average yield of winter wheat in the Krasnodar Territory was 37.1 centners per hectare. Within that territory the area under Avrora and Kavkaz wheat amounts to two million hectares.

Another variety of winter wheat Mironovskaya-808, which was developed by Academician V. N. Remeslo, is

now as widely known as Bezostaya-1, and is currently grown on approximately seven million hectares of land. Yet it, too, is being replaced by still more effective varieties such as Mironovskaya Yubileinaya-50 and Ilyichevka. Over the past three years the additional revenues that were produced by these new varieties have exceeded the expenditures that were associated with their development by approximately 1,000 times. In terms of land under cultivation and yield the spring wheat Saratovskaya-29 leads all other spring wheat varieties throughout the world. At the same time even more valuable varieties are being developed—more resistant to cold and to disease with shorter stems and with more protein.

A. F. Shulyndin, a scientist from Kharkov, has applied the methods of modern genetics to produce a hybrid of wheat and rye that has been called Triticale (the first letters of this Latin word mean "wheat", while the last mean "rye"). The possibility of combining winter wheat with rye has intrigued specialists for over a century. The first of these plants produces a high yield, but it is vulnerable to Russia's harsh and frequently snowless winters. Rye, on the other hand, survives lower temperatures but produces a lower yield. Initially Shulyndin developed a hard winter wheat, and then he crossed it with rye. The outcome was highly successful. Because of its larger ears and heavier grains its yield over two successive years was higher than that of winter wheat by 6-17 centners, and the protein content of its grains is 16-17 per cent compared with 14-15 per cent in wheat. Its resistance to cold is higher than that of wheat by 3-3.5 degrees. It is not vulnerable to blight, nor does it develop powdery mildew. Shulyndin, however, is already seeking to improve it. More specifically, he hopes to increase its resistance to cold to the level of rye and also to increase the protein content of its grains up to 20 per cent.

Siberian scientists are also seeking to develop high-yielding varieties that are well adapted to that region's

specific conditions. Because conditions vary so much it would not be very effective to rely on one or two varieties of grain alone. Even the variety known as Saratovskaya-29 is far from always being adequate for meeting the needs of Siberian farmers. With the help of field workers, Siberian specialists in plant breeding are currently seeking to develop an entire family of new varieties. In the Altai Territory alone they are receiving help from over a hundred agricultural specialists who are working on collective and state farms and experimenting with the most promising varieties under field conditions. This has already produced results. In 1974 three new Altai varieties displaced the Saratovskaya-29 variety of wheat which had itself come to the rescue of Siberian wheat-growers in dry years. One of them, named Lyutetsens-46, has surpassed the standard variety by almost 30 per cent.

Both in Siberia and in Kazakhstan, especially in their steppe regions, the use of scientific methods of land cultivation is equally important. A system of anti-erosion measures has been developed at the USSR's Grain Farming Institute, which is located near Tselinograd, under the direction of Academician A. I. Barayev. It has recently begun to operate on vast areas of newly cultivated virgin lands. More specifically, the use of shallow ploughing, fallows, and crop rotation has led to a doubling of grain harvests during the last three years alone. In Kokchetav Region grain yields have increased from six to 13.7 centners per hectare, while in the Altai Territory they have increased from seven to 16 centners per hectare. The improved system of land cultivation is now applied to 22 million hectares.

Similarly, high-yielding varieties of rice have been developed in the Soviet Union, which equal the world's best. This refers to such varieties as Krasnodarsky-424, Kuban-3, and Dubovsky-129, which are able to produce 70 to 90 centners per hectare. A yield of more than 100

centners per hectare was obtained by the Sarninsky plant-breeding station in the Kalmyk ASSR through the use of Krasnodarsky-404. The use of new high-oil-content varieties of sunflower developed by Academicians V. S. Pustovoi and L. A. Zhdanov has increased the output of sunflower per hectare by three times and its overall output by 14 times. The resulting yearly increase in the value of vegetable oil is more than 300 million rubles. In the case of maize the introduction of hybrids has increased the yield of both grain and leaves by 20-30 per cent, and similar achievements have been recorded in the development of high-yielding varieties of sugar-beet, potatoes, long-fibre flax, and cotton. The yield of the new cotton varieties that have been developed is nearly twice as high as earlier, even when they are grown on land that is contaminated by wilt.

Still other improvements, however, are expected.

While there was a time when new varieties of agricultural plants were developed by a single person, today this involves several branches of biological science. Entire groups of scientists, including physiologists, biochemists, cytologists, phytopathologists, and entomologists, work under the direction of plant-breeding specialists. The development of new varieties has thus become a group activity within which mechanisation is beginning to play an important role.

Twenty-eight plant-breeding stations were established in the USSR several years ago, whose task is to develop hybrids and new plant varieties for particular geographical zones. To aid experimenters crop collections are set up at each centre. These collections are provided by the Vavilov Plant Development Institute, whose stock of wheat varieties alone numbers more than 25,000 items.

Although 10 to 15 years are usually needed to produce a new variety of cereal, modern technology can reduce this period to one-half or one-third of that time. In particular, the work of plant-breeding specialists is

facilitated by the use of artificial climate chambers, of which there are two types, one for producing favourable conditions and the other for producing cold temperatures. Facilities for accelerating the growth of plants are also being developed. Moreover, researchers need not wait for spring for sowing, since it is always summer within such chambers, which are able to grow up to three generations of each type of plant over the year. They are also able to timely interfere in the process of creating a new variety. A full development cycle "from seed to seed" lasts 60 days.

In addition to their use for developing new varieties throughout the entire year, artificial climate chambers can produce desired environmental conditions, such as harsh winters, dry summers, or a humid fall. Conditions that are favourable for the development of harmful insects or salty soil may be created through corresponding control programmes. Researchers are thus able to test individual varieties before sending them into the field. Within such chambers plants develop under an artificial sun, and specialists decide which particular plants should be favoured.

Considerable efforts are being devoted to the dissemination of research findings in Central Asia, particularly when they bear on the growing of harvests on irrigated lands. An operational use of programme methods for obtaining cotton harvests is envisaged in the near future. Uzbekistan, Tajikistan, Kazakhstan, and Kirghizia all passed the 30 centner per hectare mark in the harvesting of raw cotton in 1974, and the current objective is to raise this figure to 50 centners. This increases the importance of a proper regulation of water regime. It is believed that in the case of cotton it is important to determine its requirements in water with due regard for the physiological needs of the plant as well as its specifics as variety. Too much as well as too little water reduces its yield. Current research activities are concerned with the

influence of water regime on rates of photosynthesis, plant nutrition, and other processes of metabolism. Programme-controlled harvests call for a double regulation of water regime. Both vertical pipes and closed drainage systems are employed rather than simply canals and drains of the collecting type.

Over the past several years the government has, therefore, sharply increased its capital investments into the agricultural sectors of the Central Asian republics. In Uzbekistan alone the volume of resources invested into the production of raw cotton during the Ninth Five-Year Plan (1971-1975) was equal to that which was invested during the preceding 40 years. It has been estimated that the average yield of cotton on irrigated land is six to seven times greater than on dry land. It is planned to develop new types of cotton farms in Central Asia, within which all relevant achievements of science and technology will be applied. These include the most modern automated irrigation and land improvement systems that are able to provide an optimal state of the soil, as well as control with the help of remote sensors that convey signals concerning the current needs of plants for both water and nourishing substances.

A number of improved breeds of cattle, sheep, goats, horses, and poultry have also been developed by Soviet scientists. In particular, such highly productive breeds of cattle as the black-spotted, Kostromskaya, and the Sychevskaya; and also the Siberian, Northern, and Kemerovskaya breeds of pigs; and the Altai, Kuibyshev, Gorky, and Stavropol breeds of sheep have all been developed within the Russian Federation. The Lebedinskaya breed of cattle, the Ukrainian steppe breed of white pigs, and the Askaniya breed of sheep have been developed in the Ukraine, while the Estonian breed of bacon-producing pigs was developed in Estonia. Kirghiz fine-fleeced sheep and the Tien Shan semi-fine-fleeced sheep were both developed in Kirghizia, while the Kazakh white-headed

breed of cattle and the Kazakh fine-fleeced breed of sheep were both developed in Kazakhstan. Methods have also been devised for dispensing prophylactic measures and veterinary services on a large scale.

Considerable efforts are being made to create a reliable and high-quality fodder supply with a balanced protein content. It is well known that to compensate for protein shortages in animal fodders food grain is widely used in the industrial capitalist countries. Research in the Soviet Union has indicated, however, that it is better to develop a microbiological industry than it is to employ wheat, for example, for increasing the protein content of cattle fodder and of feed for poultry. This refers to the use of industrial methods to produce microscopic fungi and seaweeds, yeast, and bacteria capable of processing the byproducts of pulp and paper mills, distilleries, and other industries, in ways that accumulate vitamins and proteins. The addition of one ton of such a vitamin and protein concentrate to other foods produces an additional 1.5-2 tons of meat or else 25-35 thousand eggs. In the feeding of pigs a ton of such a concentrate replaces 3.5-5 tons of fodder grain, while in the milk-feeding of calves it replaces eight tons of milk. In 1975 the level of output of such concentrates was over a million tons.

The scientific management of agriculture implies much more than merely the development of better varieties of plants and breeds of animals, since these must also be adapted to local soil and climate conditions to the greatest possible extent. The Soviet Union's territory is very large, and its agricultural lands are marked by a great diversity of soil and climate conditions. There have been considerable research activities in recent years to identify those zones and districts whose soil and climate conditions and capacity for specialisation conform to specified standards. As a result, 36 large farming zones and 546 microareas have been identified, and this has already

made it possible to develop so-called zonal farm-management systems.

A farm-management system represents a complex of organisational, managerial, technical, and technological measures, whose aim is to employ productive resources in the most rational way and to obtain a maximum economic effect under given specific conditions. Above all this requires that an appropriate structure of output be identified, as well as the type of specialisation that is suitable for the given zone, district or farm, the level of concentration of production, the most rational size of enterprises and of their branches, and appropriate measures for intensifying production.

Within a particular zone a scientific agricultural management system includes:

- the given zone's specialisation, which corresponds to both its natural and its economic conditions and also its government assignments to produce particular agricultural goods;

- a system of land cultivation, which defines an entire complex of measures to increase its fertility and its rational utilisation;

- a system of animal raising, which includes a specification of those cattle breeds, upkeeping and care technologies that are most productive in a given zone;

- a system of machines, which corresponds to the given zone's specialisation and its systems of land cultivation and animal raising, and also to the requirements of a complex mechanisation of all labour processes.

The use of zonal systems of agricultural management produces agricultural regions with production types of enterprises by which we imply agricultural enterprises similar in terms of their specialisation, the composition of their principal and auxiliary activities, the level of production intensity, specifics of technologies used, and so on. The major purpose of the production typification of farms is to define their most rational size, to ensure

the most effective combination of branches and lines of production in them, and to elaborate standard schemes of economic management under comparable conditions. There is a great diversity of such production types of collective and state farms. In particular, there are more than 30 of them within the agricultural zones of the Russian Federation alone. Such a classification of farms facilitates planning and the analysis of their activities and the introduction of better methods. It also provides a more reliable basis for the transition of particular collective and state farms to new and higher levels of technical and economic development.

Soviet scientists are also increasingly active in struggling against agricultural pests. Expenditures on the protection of plants have increased ten times over the past 20 years. While 34.9 per cent of the world's harvest is currently lost to agricultural pests, that figure is approximately 20 per cent in the USSR. Even that, however, is far too large.

Effective means of combating agricultural pests, diseases, and weeds require a complex of measures that include agrotechnical, chemical and biological methods of plant protection. The advantages of the biological method have recently become increasingly evident. It is noted in particular for the fact that it is harmless to human beings, animals, and plants and that it continues to operate over long periods of time. The many examples of the use of that method include the following two. The greatest scourge of greenhouse cucumbers is the spider tick. Another predator tick, however, the *Phytoseylus*, is currently employed to neutralise it over an area of 900 thousand square metres. In doing so, chemical means are entirely avoided. Each ruble that is spent on applying this biological method yields 14 rubles' worth of additional output. The Lenin Luch Collective Farm in Moscow Region has now abandoned the use of chemical means in combating spider ticks in all of its greenhouses.

Similarly, a special bacterial preparation named entobacterin is employed by many farms on the advice of scientific research centres in order to neutralise pests that are destroying fruit-trees, berries, vegetables, and other plants. It is 95-100 per cent effective in destroying a number of such harmful pests as cabbage butterflies, moths, and apple moths, and increases the harvests substantially. Thus, cabbage crops increased by 10-11 centners per hectare following its utilisation, which has also made it possible to fully dispense with the use of chemical insecticides.

Still another indicator of the growing role of science and of its transformation into a productive force is provided by the establishment of special research centres at agricultural enterprises (institutes, branch units, laboratories, experimental stations, and support centres), and by the creation of a kind of research and production associations. In Tambov Region, for example, which was one of the first to initiate specialisation and concentration in animal husbandry and developing inter-farm relations, a branch of the All-Union Institute of Animal Husbandry has now been established, which studies the technology of industrial processing of animal products. Similarly, a scientific agricultural production management centre is also being established there.

Another example is provided by the Rodina Collective Farm, which is located in the Uglich District, Yaroslavl Region. This farm is specialising in producing milk, which accounts for over one-half of its revenues. But such a deep-going specialisation implies particularly high demands as regards the quality of milk. Its purchaser, which is an industrial enterprise that processes its milk, requires not any type of milk, but milk with preset properties. As a result, the collective farm has entered into co-operation with the All-Union Butter and Cheese Research Institute, which is located in the city of Uglich, and with its experimental production plant. A research and pro-

duction association has thus been created that includes the collective farm, the milk-processing plant and the institute. This has now been operating successfully for over eight years.

During that period the association has developed a comprehensive programme for managing the plant's supply of raw materials and has also fundamentally restructured the entire chain of processes that are associated with dairy farming. It has also raised the efficiency of production and increased the reliability of the collective farm's fodder supply. Aside from developing a programme of action the Institute's scientists are also helping to implement it in many ways. At the present time all decisions relating to technological problems are taken jointly. Major decisions are discussed by the Institute's Scientific Council at meetings in which representatives of both the plant and the collective farm participate. These ties of the research and production association are becoming stronger every year.

Because research activities that contribute directly to production processes become, in fact, a part of such production processes, such arrangements are particularly effective. In such cases scientists, too, become direct participants in the production process. They, thus, join the ranks of that category of brain workers who, to quote Marx, "*directly engaged in the production of material wealth*".¹

8. MODERN APPROACHES TO THE ORGANISATION OF PRODUCTION

Scientific and technological progress requires improvements in the organisation of production. A scientific approach to the organisation of production involves three

¹ Karl Marx, *Theories of Surplus-Value*, Part I, Moscow, 1975, p. 412.

major aspects of the arrangements that influence a farm's development: 1) improvement and concretisation of the socio-economic principles of the collective's productive activities; 2) introduction of progressive methods of production management; 3) application of the most effective forms of organisation of labour activities. There have been a number of interesting developments in all three of these areas in the USSR's collective and state farms in recent years that should be of interest to organisers of co-operatives in other countries.

It has already been noted that co-operative property constitutes the socio-economic basis of collective farms and that the arrangements on which their further development is based are reflected in their Model Rules. The Model Rules that were adopted in 1969 consolidate and develop still further both the principles of democracy that govern collective farm life and the socio-economic foundations on which its production activities are organised and managed. Collective farms are free to introduce amendments in the Model Rules in the light of local conditions, and this itself constitutes one of the democratic aspects of the collective farm system in the USSR. Another is provided by the Model Regulations that govern the internal arrangements of collective farms. Such a normative document, which was drawn up for the first time, was examined and approved in March 1970 by the All-Union Council of Collective Farms. It represents a generalisation of the experience of collective farmers in different zones, proposals of local agricultural bodies and scientific organisations, and the requirements of the legislation in force. The Model Regulations governing daily routine complement individual provisions of the Model Rules and make them more specific. They also serve to consolidate the system of internal production, labour, and other relations that have developed on collective farms. Their aim is to make possible increases in labour productivity, a correct organisation of pro-

duction and of labour, a strengthening of conscious discipline, and a full and rational utilisation of working time.

As in the case of the Model Rules, the Model Regulations may be altered in accordance with local conditions. The Model Rules is only concerned with the most fundamental issues bearing on the organisation of production and of labour, such as the dependence of particular forms of organisation of productive operational units on specific conditions, and the need to consider a diversity of factors in defining the working personnel of these units. The Model Regulations indicate the specific numbers, sizes, and types of production units that correspond to various levels and types of production, and its territorial location. It is emphasised that there exists a great diversity of forms of labour organisation that may in fact be appropriate and that these depend primarily on the type of machines and mechanisms that are employed on a given collective farm.

In the case of state farms, which are government enterprises based on state ownership, their administration is based on the principle of one-man management. This does not imply, of course, that either democracy or collective opinions are ignored in their organisation and their management of production. While the rights and responsibilities of the state farm director are substantial, in practice it is no longer possible today to manage the complex modern production structure of a self-financing state farm without relying on specialists, on the most active workers, and on the entire collective of the state farm.

One of the most important forms of encouraging the participation of state farm workers in the management of state farms are standing production conferences. These are created in all state farms, subdivisions, and teams in which there are not less than 100 persons. Whenever a smaller number of workers are involved, problems bearing on production are examined at general

meetings of workers and employees. Proposals and recommendations concerning improvements in the state farm's production activities that originate in these standing production conferences are then carried out by the farm's management. In the practice of leading state farms an increased role is also played by public bureaux of economic analysis and state farm councils at various levels as well as labour codes of specific bodies of workers.

In the Lensovetovsky State Farm, for example, which is located in Leningrad Region and is known throughout the country, a production and technical council has been established to assist its director. This council meets once a week, and its members include all leaders of operational units as well as specialists and leading workers, and also the state farm's socially most active members. These meetings are usually concerned with the formulation of proposals bearing on technological improvements and on the organisation of production, labour, and management. It also hears the judgement of specialists on such issues. Its work serves as a school of democratic management facilitating the sharing of knowledge and the further development of existing skills.

In 1971 a Labour Code for Members of the Lensovetovsky State Farm was adopted. Its principal sections contain the following provisions:

- 1) The state farm elects a public commission on labour discipline, whose responsibilities include control over the current state of labour discipline, the correctness of evaluations of the work of individuals, and the preparation of relevant recommendations.

- 2) The title of Honoured Member of the Lensovetovsky State Farm is established as well as that of Veteran of Labour. These are awarded for outstanding services to the collective and for selfless and excellent labour. They are marked by awards of breast badges, certificates, and valuable gifts as well as monetary awards to be paid each year at vacation time. Such workers also

receive monetary rewards at the time of their retirement. In addition, the important dates in their lives are marked by state farms.

3) Both social and administrative measures are developed for dealing with persons who violate social order and also with idlers. These include their inadmissibility to the title of Front Ranker of Communist Labour, transfer to lower-paid work for periods of up to three months, the elimination of awards deriving from socialist competition, and a reduction of up to 50 per cent or even a full elimination of yearly awards for overall state farm achievements.

Both the growing volume of technical equipment and the introduction of modern production technology, on the one hand, and improvements in and further democratisation of socio-economic relations within state farms, on the other, place new demands on the production management system. Traditional forms and methods of production management that are primarily based on the manager's own skills are becoming increasingly inadequate in this respect and less effective. A large number of different labour and production processes take place each day on modern collective and state farms, which involve hundreds of workers and a diversified technology. The efficiency of the entire farm itself depends on how these activities are organised.

Today specialists in collective and state farm production have an especially important role to play. Whenever the mechanisation of production is proceeding rapidly and the farm is moving to new levels of concentration and specialisation, thus producing important qualitative changes in the enterprise's overall structure, it is important to adjust the management of specific operational units in time. This has led many farms to enlarge the technical services that they provide for plants, animals, and equipment. As a result, it is possible to make fuller use of the knowledge of specialists and also to assign

them to the solution of specific technological tasks rather than to administrative work.

Important changes are also taking place in the organisational and managerial activities of collective and state farms which are producing a shift to the "shop"-oriented system of management. This refers to the replacement of multi-purpose operational units by large specialised units ("shops"), within which only one or two homogeneous products are produced. Such a managerial structure increases the responsibility of the farm's leading specialists for the current state of the relevant activities. It also alters the character of the collective farm chairman's (or the state farm director's) and his deputies' operational production management.

The basic organisational structure of a collective farm's operational management may be illustrated by the example of the 40 Lyet Oktyabrya Collective Farm, which is located in the Yelanets District, Nikolayev Region (the Ukrainian SSR). This farm produces grain, meat, and dairy products and covers nearly 10,000 hectares, including about 8,000 hectares of arable land. It encompasses eight inhabited localities that are found at distances of two to twelve kilometres from the central estate. Three operational units are responsible for most of its output. Before the introduction of measures for improving its management a three-level organisational structure had been employed: the collective farm chairman—division managers—managers of production subdivisions.

In view of the prevailing farming conditions, namely, the large-scale character of agricultural operations and the diversity of production, its management system is based on the sectoral principle. This means that each division manager is now responsible for the activities in his own sector alone rather than for a number of different activities. He is thus able to specialise in the breeding of cattle, the production of pork, or the production

of cereals and vegetables. The operational management of production activities of the entire farm has now mainly become the responsibility of the deputy chairman. At the same time its managerial personnel was reduced by six persons yielding a corresponding reduction of 6.4 per cent in yearly payments for managerial activities. A centralised control service plays a key role in the new managerial system. It permits the collective farm's deputy chairman to supervise current activities in accordance with prepared operational plans. It also makes it possible for all managerial personnel and specialists to receive information concerning the current state of these activities within a very short period of time, to transmit the necessary instructions, and to prepare programmes for meeting the principal current operational problems over the next few days. That service is, thus, responsible for gathering information, for controlling current operations, and for transmitting operational instructions.

A centre for operational management has also been set up on that collective farm. Its personnel include operators as well as the control officer. Information from production sectors is transmitted by assigned informants who are usually the same persons who also carry out a general monitoring of local production activities. Every ten days either the collective farm chairman himself or his deputy holds operational conferences of managerial personnel and specialists from all sectors. Their purpose is to co-ordinate the activities of individual operational units and to define the leading directions of the farm's activities over as long a period as possible. Evaluations of the current state of production activities as well as the planning of new tasks are based on an accurate documentation of the course of production processes. This relates to the net outcomes of ten-day segments and is presented on display stands with the help of diagrams.

An interesting operational management system that is also based on control services has been introduced by

the Sommerling State Farm in the Estonian SSR. Here two shops—one for animal husbandry and one for cereals and vegetables—have now replaced former territorial units. The first is managed by the head specialist on animals, while the second is managed by the chief agronomist. A control centre has been operating on that state farm since 1973. It contains a large map of the farm's territory with dummies of currently operating tractors and machines. The control officer is able to provide full information concerning their activities at any time. He also receives requests for assistance, informs repair specialists of breakdowns in the farm's equipment, and monitors repair operations. This has facilitated the rational utilisation of equipment and has led to a reduction in monetary expenditures. In carrying out hay-making operations, for example, the farm's specialists were able to replace an MTZ-50 tractor and an E-067 combine, whose yield is 16 tons per shift, with a self-propelled combine of the E-280 type, whose productivity is 60 tons. This reduced the corresponding expenditures by 70 per cent.

Such systems of operational production management are used on an increasing scale. At the present time more than 3,000 state farms are using control services and it is expected that they will be used on at least 30 per cent of all farms within the next few years. Specialists expect that this will increase the balanced nature of production activities, and will produce substantial improvements in the farms' qualitative indicators. But it should be stressed that an effective organisation of operational production management on the basis of control services requires modern means for communicating and processing operational information. This includes reliable systems of radio and telephone communications and in some cases (in animal husbandry) remote control systems. On the other hand, it has already been the experience of many farms that the initial expenditures on the

establishment of lines of communication and on acquiring the technical equipment that control services require are in fact repaid within a period of one to two years.

A leading principle of scientific management concerns maintaining proper proportions between the quantity of land (or head of cattle) and associated equipment that is employed, and the number of workers assigned to that land (or cattle). This constitutes the basis of effective farm management. Thus, any change in one of these factors calls for corresponding adjustments in the other two. At the present stage of development, however, the quantity and quality of equipment that is employed is the most dynamic factor.

When the volume of equipment of collective and state farms was insufficient and when production was neither concentrated nor specialised, it was felt that complex teams represented the best form of organising labour. They were responsible for all sectors of production associated with a given rural community. Because of the shortage of equipment they were assigned all types of activities. As the material and technical infrastructure of farms became stronger, however, and as the process of concentration and specialisation in their activities intensified, field tractor brigades replaced the earlier complex brigades. They now constitute the basis of the large structural production units of collective and state farms. A further intensification of agricultural production has brought about a division of labour within the teams themselves, producing a form of organising production that is based on sections.

As a form of labour organisation within a team, sections originally developed in growing row crops at a time when these crops were basically tilled manually. As mechanisation developed, the role of manual labour greatly declined. Intercultivation and the harvesting of row crops began to be carried out largely with the help of machines. This resulted in the appearance of so-called

mechanised sections, which represent one of the most promising forms of organisation of labour activities today, and are employed increasingly in all sectors of agriculture. Mechanised sections serve as a primary form of organisation of labour that relies mainly on its own resources in carrying out the basic mechanised operations that are associated with the cultivation of one or more types of plants on lands that have been assigned to them.

Both crop rotation and equipment are usually assigned to such individual sections. They receive a piece-work assignment listing the area of land to be sown to a crop or crops, expected yields, gross harvests, and costs of production in monetary terms. Their earnings are recorded at the end of each year and depend on their actual output. In the meantime, advances are paid for the time they worked. This serves to overcome tendencies to divide tasks into those that are rewarding and those that are not. It also serves to enhance the role of material incentives in increasing the end efficiency of production. The membership of such sections is defined on a voluntary basis, and section leaders are chosen by its members, usually because they are its most skilled and respected workers.

In this connection the achievements of a section led by V. Y. Pervitsky, a Hero of Socialist Labour, working in the Krasnodar Territory, have received wide attention throughout the country and beyond its borders. The type of organisation of production that he employed made it possible for labour productivity to increase by eight-ten times over a short period of time. Each of the section's ten members accounts for more than 400 tons of grain. Harvests of winter wheat are consistently larger than 50 centners per hectare, while for maize that figure is 45 centners per hectare. Today there are entire farms in the Krasnodar Territory rather than individual sections that work on a similar basis. In particular, the Gulkevichsky State Farm in Kavkazsky Region has relied on such a

new system for organising labour activities over the past six years. The state farm's entire land (about 8,000 hectares of arable land) has been assigned to six mechanised sections. As a result, each member of such a section is responsible for approximately 110 hectares. The number of persons in each section varies from 11 to 14 persons. The yield of basic crops on that state farm is much higher than the average figure for the entire district, and also higher than in neighbouring farms which do not employ mechanised sections. Thus, the Krasnodar Territory is the home of a new system of organising labour activities. In 1971 alone, the work of that territory's mechanised sections has reduced the country's labour expenditures by more than one million man-days. Savings resulting from the corresponding decrease in the cost of production of grain, oil-bearing seeds, and sugar-beet are approximately 80 million rubles per year. Between 1971 and 1974 the number of mechanised sections on collective and state farms located in the Russian Federation increased from three thousand to 7.8 thousand. An increasing number of such sections are also appearing in the country's other republics.

The organisation of labour activities in the shape of sections has also produced new forms of labour in other spheres and sectors of farm management. In particular, there already exist so-called transportation sections in many of the country's farms. In most cases they have been organised to perform a variety of services and auxiliary operations in order to free the principal production sections from these tasks. A transportation section consisting of seven skilled machine operators and drivers has been working in one of the divisions of the Malchevsky State Farm in Rostov Region since 1970. Five tractors and two self-propelled chassis have been assigned to that section which is led by the division manager. It carries out auxiliary operations that had formerly been assigned to the plant-growers and animal-breeders of the division.

The latter are now also working in accordance with the new system for organising production activities. The above-said operations include the acquisition and transportation of fodder, the processing of manure, and the transportation of harvested crops. Before such a section had been organised these tasks required 22 workers within that division. Subsequently their number was reduced to 14 persons.

Still another promising form for organising labour activities has emerged in recent years, namely, specialised temporary mechanised teams. They are responsible for specific technological operations such as, for instance, in combating blight and pests, in spreading fertilisers, and in the gathering of grain crops as they ripen. This provides certain advantages in the use of equipment, increases the productivity of labour, develops labour skills, and reduces expenditures. Usually such teams are equipped with machinery needed for performing a specified volume of work. The productivity of major types of machinery such as combines, for example, is then assured by making available the necessary types of auxiliary equipment (such as transportation facilities).

The new forms and methods of organising production and labour activities that have appeared on collective and state farms are intended to strengthen the material interest of collective farmers and state farm workers in the final results of production. They contribute increasingly to the development of a feeling of responsibility for the farm's land as well as a feeling of comradeship and mutual help in the course of production activities.

9. FORMS AND METHODS OF PROVIDING MATERIAL INCENTIVES

Under capitalism capital constitutes the basis of the life of the farmers. When capital is available the farmer grows wealthier, and when it is unavailable he is ruined.

Moreover, between wealth and ruin there exists an entire range of intermediate standards of living for farmers and of states of development for their farms. Capital produces a differentiation of farmers, fragments their social relations, and stimulates a competitive struggle among them.

The volume of capital that is required to finance the activities of a viable farm has been increasing each year. According to G. Campbell, a well-known American economist, forty years ago it was still possible for a farmer to be in a competitive position if he had a thousand dollars. Today in order to be effective a farmer in the United States must pay between 40 to 150 thousand dollars for his land (50-100 hectares), invest 20 to 400 thousand dollars in buildings and from 20 to 400 thousand dollars in the purchase of machines, and also invest over 20 thousand dollars in land improvement activities. Thus, G. Campbell observes, even without cattle and circulating capital a farmer now requires 100 to 260 thousand dollars to be competitive.

G. Campbell expects that in the future this amount will have increased by three to four times by 1985. At that time one million dollars will, therefore, be needed to run a farm.¹ It is unlikely, however, that there will be many such millionaires. According to American forecasts, less than one million farms will remain at that time, and they will also continue to vary substantially in size. This brings to mind the words of Lenin to the effect that "capitalism raises the level of agricultural technique and advances it, but it cannot do so except by ruining, depressing and crushing the mass of small producers".²

Such a fate does not threaten the farmer under socia-

¹ See *Journal of the American Society of Farm Managers and Rural Appraisers*, Vol. 34, No. 1, 1970, pp. 14-15.

² V. I. Lenin, *Collected Works*, Vol. 16, p. 446.

lism where labour on a social farm constitutes both his most important "capital" and the basis of his personal welfare. During his working years his income depends on the level and quality of his labour, while following his retirement, his pension rights are determined by his earlier labour activities. A farmer's social position and the respect that he acquires in his own village and district, as well as within his republic and in the country at large, depend entirely on the way he works. Let us consider more closely the manner in which payments for the work done are determined in the case of collective farmers.

With regard to the level of these payments between 1913 and 1960, the average real income of a farmer increased by 4.5 times and by more than 13 times between 1913 and 1975.¹ If, however, the value of free education, medical services, pension payments, subsidies, and other privileges are also taken into account, then the growth of the real income of farmers will be still greater. This growth has been especially rapid in recent years (Table 7).

Table 7

Increases in Payment for the Labour of Collective Farmers
and State Farm Workers between 1965 and 1975
(as a percentage of the 1965 level)

	1965	1970	1975
Payment for the labour of collective farmers	100	146	169
Payment for the labour of state farm workers	100	135	172

¹ In the present context real incomes include monetary incomes and incomes in kind, derived from both socially organised farming activities and activities of farmers on their personal auxiliary holdings, following a deduction of taxes and other contributions.

The average payment for the labour of collective farmers and state farm workers had thus increased by almost 70 per cent between 1965 and 1975 alone. In analysing this growth in the level of payments for labour of Soviet farmers, especially of collective farm members (for in collective farms this level depends much more on the farm's own economic development than in the case of state farms), it should be kept in mind that average figures that relate to all collective farms do not fully reflect the nature of these changes. For in recent years there has also been a substantial reduction as regards the differences in the levels of payment in different collective farms. In 1960, 98.6 per cent of all collective farms paid less than three rubles per man-day of work and only 1.4 per cent of the collective farms made larger payments, whereas in 1972 only 16 per cent of the farms paid less than three rubles, while 84 per cent paid more. Among the latter group, moreover, 39 per cent paid more than four rubles per man-day of work and 3,900 collective farms paid more than five rubles.

Let us now consider the manner in which payments are made for the farmer's participation in socially organised labour activities, and let us begin with collective farms. Because a collective farm is a co-operative enterprise, a correct determination of the principles that guide the distribution of the income created by its members' joint labour is especially important. There are quite a few forms of such distribution. The incomes of early collective farms were distributed equally among all farmers contributing to production, or else equally among all persons living on the collective farm, including family members, or else still in accordance with the size of the land that households had initially contributed to collective land tenure. Gradually and in an empirical manner collective farms moved away from such methods and began to distribute incomes in accordance with labour expendi-

tures. Points, stamps, certificates, and conventional rubles were employed for this purpose at various times.

Towards the end of the 1920s the so-called system of labour units came to be widely employed. A labour unit represented a conventional magnitude that reflected the quantity of labour expended for a given type of task. Expenditure of labour for some simple type of work was taken as a basic reference unit. This could be, for example, caring for 15 horses or 20 pigs during an eight-hour working day. More complicated types of work were then valued in relation to such a basic reference unit. The value of one labour unit was determined by dividing the farm's overall consumption fund by the number of accumulated labour units.

In the course of time the use of such conventional units led to a still more progressive form, namely, work-days. This served as the principal form of monitoring labour activities and of distributing incomes for many years. The work-day, too, was essentially a conventional unit of account. In most cases it did not correspond to the quantity of labour contributed during a working day. It was not a calendar-oriented concept. It is an economic conception that reflects such a system of distribution according to work done which corresponds to a relatively high degree of group isolation of collective farms. The need for its emergence derives from the insufficient level of development of collective farms at a particular stage. The use of work-days corresponded to a need to distribute the consumption fund in accordance with the quantity and quality of labour that was expended by collective farm members.

During the early years of Soviet power there were attempts to effect monetary payments for labour on collective farms. This practice did not become widespread, however, for at least two reasons. First, the emergence of collective forms of ownership was still in its early stages in the early collective farms. Economically these

co-operatives were still weak and largely represented a semi-natural economy. Under such circumstances it was almost impossible to express the labour of collective farm members in terms of the measures that are employed in enterprises organised on the basis of state property in the means of production (e.g., plants, factories, state farms). In addition, one of the major tasks during the initial stage of collective farm development was the encouragement of intra-group collectivism.

The use of work-days corresponded to the objective conditions that characterise that particular stage. In particular, the expenditures of live labour on collective farms expressed the principles of internal collectivism in a simple and direct way. Those collective farms that had attempted to rely on monetary payments for labour soon convinced themselves of the need to apply some conventional measure of labour contributions such as work-days. The point is that accounting in monetary terms also calls for a partial or full payment of the sums. In conditions of a semi-natural economy it was difficult to make such payments in time. The actual results of production activities became known only towards the end of the year, while reserve funds for labour payments did not yet exist.

Not infrequently, collective farms were also used to define labour payment rates by referring to rates being paid in the state sector. As a result, the annual amount of wages differed from the actual consumption fund and collective farms were compelled to revise all payment rates at the end of the year.

Work-days represent a specific measure of collective farm labour. Accounting in terms of working hours expresses that which is common to all labour processes, and money, in turn, expresses the universal character, the equality of labour in society as a whole, whereas the work-day serves as a measure of labour within a given collective farm. Unlike a monetary unit (a ruble or a kopeck), which can be exchanged for any object that is

a commodity, a work-day is only effective within a particular collective farm and may not serve as a means of payment to other collective farms or to industrial enterprises. Accordingly, it is a conventional unit that provides a common measure for the labour expenditures of individual members of a particular collective farm. It also determines their share in the final outcome of social production activities.

As a specific form of registering labour contributions the recording of work-days made it possible to both relate the labour expenditures of individual collective farmers to a common measure and determine their share in the collective farm's end results. The payments for work-days in terms of money and also in kind appeared as their "weight". It was determined by dividing the final output and revenue included in the farm's consumption fund by the total quantity of work-days.

As the material and technical infrastructure of collective farms improved, direct monetary forms of accounting and payments for the labour of collective farmers gradually replaced the use of work-days. Today most collective farms rely on monetary forms of payment. Labour activities are paid in accordance with the quantity and quality of labour contributed by each collective farm member to socially organised economic activities. This conforms to the principle: better work and better results should receive a higher payment. Work of poor quality through collective farmer's fault is either not paid at all or is paid at a reduced rate. Both collective farmers and specialists participate in establishing work quotas and payment rates for different types of work with due account of local conditions. These are based on work quotas and payment rates employed on state farms located in the same climatic zone.

Aside from applying the principle of payment according to work done, socialism also guarantees to collective farmers a specified level of payments. The collective farm

Model Rules state that "a guaranteed payment is established for collective farm members' work in the sphere of socially organised production activities". It is true, of course, that in many respects agriculture continues to depend on weather conditions, and that occasionally the end results of work depend on the given year's weather as well. Under capitalism the farmer is completely at the mercy of uncontrollable weather conditions, and his income is influenced by numerous casual factors, fluctuations in weather conditions included. Under socialism collective farm members receive a guaranteed minimum payment independently of uncontrollable weather changes in natural conditions. That minimal level is defined by fixed payment rates for labour performed according to work quotas during the year. Collective farm revenues (for collective farms now possess corresponding reserves) and loans from the State Bank of the USSR make such guarantees possible. Still, because of the very nature of agriculture, it is important that the collective farm member be concerned with the end results of his collective farm's activities and not only with work quotas alone. Supplementary forms of material incentives are, therefore, also employed.

In order to maintain their right to a guaranteed payment collective farm members must contribute a fixed minimum amount of labour to the collective farm's sphere of social production. This means that during the year each collective farmer must work a specified number of days or else of work-days (where they are still used). Those collective farm members who fail to contribute such a minimum without valid reasons, or who are often absent from work, may fully or partly be deprived of supplementary payments and other forms of material incentives through a decision of the collective farm administration.

The collective farm board guarantees a defined schedule of payments, which are made at least once a month.

Final payments for the year's work are made following the approval of the farm's yearly report. Labour may be paid in money and partly in kind. A special monetary fund and a stock of products are set up for that purpose. The latter is made up of a share of the farm's gross harvest of grain and other products, as well as of fodder. These products are issued on account of the work done or are sold to collective farmers in the quantities and in the manner established by the general meeting of collective farm members.

Further improvements in existing forms of material incentives for collective farmers are closely linked with the organisation of their labour and the development of internal cost accounting. Cost accounting is more than a mere comparison of revenues with expenditures. Its application to a collective or state farm also requires that arrangements be devised for making each team, section, and individual worker interested in an effective and economical management of production activities. It was not accidental that in stressing the importance of material incentives Lenin regarded personal interest and cost accounting as one whole. He wrote that in order to establish firm bridges to communism it is necessary to construct them on the basis of personal interest, personal incentive and cost accounting.¹

Applying the principle of material incentives in collective farm production calls for the use of specific economic mechanisms. They include the measuring and valuing of labour, establishing proportions between basic payments and supplementary payments, determining work quotas and payment rates, reliability in making scheduled payments, and also the linkage of such payments with internal cost accounting. In such a context the finding of appropriate combinations of monetary payments with payments in kind plays an important role. A

¹ See V. I. Lenin, *Collected Works*, Vol. 33, p. 58.

particular combination of such mechanisms constitutes a labour payment system. Its nature on every collective farm is influenced substantially by such factors as the level of its economic development, the structure of its production (specialisation), and the proximity of cities and industrial centres. Since a diversity of local factors must be taken into account if the forms of material incentives are to be appropriate, it is, therefore, only natural that a diversity of actual systems of labour payments exist.

It has already been noted that collective farms initially measured the work done by their members with the amount of time spent on particular types of labour activities. On the basis of this method they practised payment by the hour. Experience showed, however, that this form of payment did not encourage collective farm members to participate effectively in social production and, hence, did not correspond to the principle of payment according to work done. In view of this, collective farms began to measure labour activities in terms of the amount of work done rather than in terms of time. Such a form of accounting and of payment was, undoubtedly, more progressive, and it was widely used. Many collective farms continue to employ it to this day. But at the present stage of development of collective farm production the most effective form of payment is that according to the output produced.

At the present time the following variants of such payment are most widely used:

1) Payment by the job (in physical terms or in terms of value). Such rates are fixed on the basis of the given year's planned output or on the basis of the collective farm's average output over the past three or four years. Depending on the collective farm's level of development, this is usually about 125 per cent of the rate-based payments fund. The latter is calculated on the basis of the planned volume of agricultural work for a brigade, section, or team. Prior to the final settlement for the output

produced, advance payments at piece rates are made for the volume of work done (ploughing, sowing, harvesting, etc.). After the completion of harvesting and other major tasks of production-in-progress (autumn ploughing, the covering of grape plants, etc.) collective farmers receive the difference between the payment for the output produced and the sums already paid as advances. This type of payment is most frequently practised within relatively small production subdivisions.

2) Payment by the piece. As in the case of payment by the job, piece-work rates may be fixed for payment for output calculated in physical terms or in terms of value. As distinct from payment by the job, the rate-based payments fund is not taken into account in calculating piece-work rates. The rate of payment is determined by dividing the total amount of a specially created fund by the volume of output, with due regard for the average crop yield for a number of years, or by the planned level of output. Work done is paid by the piece or by the hour. At the end of the year a payment is also made at piece-work rates for the entire actual output beginning with the first centner. That system is simple and is easily understood by all collective farmers, and it may be applied by farms at different levels of development.

3) Payment for a portion of the product's value. This method is most often employed in the production of flax, hemp, hop, and other highly marketable crops. During the year payments are made for the volume of the work performed or else for the time worked; collective farmers receive in payment for the output produced a part of the monetary revenue from the sale of this output. The amount of allocations from this revenue is determined by each farm itself with due regard for local conditions. Particular emphasis is placed on rewarding improvements in the quality of output.

Changes are often made in these basic variants in the

light of specific situations. Frequently different payment systems are employed within different sectors of a single farm. In addition, a variety of forms of extra payments may be used irrespective of one or another payment system. Extra payments (bonuses) are intended to encourage those collective farmers who achieve improvements in quality and reduce the time that is needed for carrying out various measures in the cultivation of plants and the raising of animals.

The Model Rules permit collective farms to find their own specific solutions in the field of material incentives. They provide for the elaboration and approval by each collective farm of an Instrument on the payment of labour that specifies concrete forms and methods for effecting such payment within each sector of the farm's sphere of social production. The Instrument also indicates the share of the gross income to be used for the payment of labour activities. Many farms divide their total wages fund into two parts. The first (usually 70-80 per cent of the fund) is intended for regular monthly payments, while the second (20-30 per cent) is employed for payments that are made at the end of the year, when the final results of productive activities are known.

The various forms of material incentives for the overfulfilment of financially independent assignments concern not only the gross output of a collective farm, but also reduced expenditures on its production. The following methods have gradually developed for encouraging production units to economise on expenditures as well as to increase output.

First, the distribution of a share of the additional output in the form of encouraging payments (25-50 per cent). For some types of output such payments are made in kind.

Second, the creation of a special bonus fund from the collective farm's net revenue. Such bonuses are paid to units that have overfulfilled planned commitments or

exceeded specified output levels. The size of such bonuses is defined by the collective farm's Instrument on payments for labour.

Third, the payment of bonuses from the resources saved on expenditures fixed in financially independent assignments.

Such uses of material incentives are particularly effective when combined with progressive methods for organising production, labour activities, and their payment. We have already mentioned some of the progressive forms of organising labour on collective farms, particularly mechanised sections, which are not given work-orders. Let us consider the relation of that form of organising production to the corresponding system of material incentives in the case of the Druzhba Collective Farm located in the Olenino District, Kalinin Region.

Both in terms of its area and of the level of its economic development this is a medium-size farm. In spite of successes in some respects its rate of development has clearly been inadequate. An analysis of its problems indicated that a poorly developed system of material incentives was one of the reasons for this. In particular, while in the case of animal husbandry labour was paid in relation to the quantity and quality of output produced, in the case of plant cultivation it was paid per unit of work done. Under such a system machine operators were not interested in the end results of their work.

In 1970 the collective farm decided to organise sections to operate without work-orders. It worked out an Instrument on such mechanised sections and prepared technological charts; each section was given financially independent assignments with a definite wages fund and a certain amount of resources for other types of expenditure. All these documents were first discussed and approved by the members of the sections themselves.

In accordance with the Instrument each section leader was obliged to participate in the preparation of techno-

logical charts and financially independent assignments as well as in supervising the work of both section members and workers attached. He was also responsible for controlling the fulfilment of planned assignments and for adhering to specified technology of plant cultivation, for the use of equipment and working time, for the quality of work, and for accounting. The section leader was given the right to propose changes in schedules of work activities, to raise the question of expelling undisciplined members from the section, to demand that the collective farm management make both equipment and work force available to them on time, to check the final payments for the output produced, to deprive individual unscrupulous machine operators (with the approval of section members) of supplementary payments and bonuses, and to reject low-quality work.

The planned assignments as regards yields are based on average indicators achieved over the past three to five years with due account of improvements in agrotechnics. The technological charts specify the time at which additional equipment and work force will be needed, the free time of machine operators and their employment outside the section.

With the introduction of the new system of payments daily work-orders were abolished and working time is now recorded in terms of man-hours, with the aid of special registration lists. Pending the final settlement, advance payments are made for the work of machine operators at the rate of approximately four rubles a day. The final payment is made for the output produced at the end of the year. Section leaders are paid an additional 10 to 20 per cent of their earnings. For output above the planned level section members are paid 20 per cent of the value of marketed output. Payments for work outside the section are made at the end of the year according to work-orders. The work of those collective farmers who are not permanent members of such sections is paid

from the section's yearly wages fund on the basis of their own work-orders.

The transition to a farming system without work-orders has led to increased autonomy, an improvement in the organisation of labour activities, a greater measure of initiative, a larger measure of mutual control and mutual assistance, a reduction in machinery waiting-time, and a better utilisation of machines. In 1970 the Olenino Collective Farm was able to deliver its entire output of flax before the 1st of December, and its profits from sales of flax increased by 3.5 times. In 1971 its flax harvest per hectare was larger than in the preceding year by 2.2 centners and reached seven centners. The volume of flax fibre purchased by the government almost doubled, and the farm received a revenue of nearly 1,100 rubles for each hectare of land under flax. Net revenue from that crop reached 60,000 rubles and the profitability of these production activities was almost 200 per cent. At the same time the costs of production of plant cultivation declined and labour productivity increased. While the rate of payment per man-day increased, the share of monetary payments to collective farmers declined from 69 to 43 per cent. This made possible a further development of social farming and of its material and technical infrastructure.

The combining of progressive methods in organising production with material incentives, cost accounting and personal interest produces a great effect. The Communist Party of the Soviet Union is currently considering a policy that would seek to teach every collective farm member to learn effective management. Particularly rapid progress can be achieved in this respect by properly combining cost accounting with the system of payment and labour organisation. In this case each team, each section, and each collective farmer become most interested in adhering to the schedules and quality indicators of intermediate tasks as well as in the end results of collective labour activities.

Let us now consider the case of state farms, where the labour payment system is somewhat different and is closer to that of industrial enterprises. Workers on state farms are paid in accordance with the Instrument on the payment of labour that is drafted jointly by the state farm's administration and its trade union committee. The Instrument lays down the most appropriate forms and methods of material incentives in the light of the specific conditions within which the given state farm operates. At the present time payment by the piece on a progressive scale and payment by the job on a progressive scale are most widely employed. Under the first system workers prior to the production of output receive a monthly payment for the amount of piece-work done, i.e., on the basis of the existing rates of payment and work quotas. Additional payments for the output obtained are made following the completion of harvesting and other activities. Workers are paid an extra 1.25 per cent of their earnings per each per cent of plan fulfilment above 80 per cent and 1 per cent of their earnings per each per cent of the overfulfilment of the plan. Fundamentally the system of payment by the job on a progressive scale differs little from a similar system used on collective farms.

Bonuses and extra sums on state farms are paid from two sources: from the wages fund and from a special material incentives fund. The following types of bonuses and extra payments are provided for:

- payments for high-quality results achieved on schedule or earlier;
- payments for overfulfilling the production plan with due regard for quality;
- payments for reducing direct expenditures per unit output or else for reducing production costs below the planned level;
- payments for attaining high-productivity indicators with regard to cattle and poultry.

At the present time the country's state farms are seeking to find the most effective forms of material incentives. In particular, a mass experiment was initiated in Estonia in 1970 that provides for the payment of all bonuses to state farm workers from a single source, namely, their material incentives fund, which itself is financed from actual profits. Initial results suggest that there are positive aspects to such a system.

Let us consider, for example, the Lenin State Farm in Estonia. In 1972, 216,000 rubles from its total profits of 1,819,000 rubles were placed in its material incentives fund. All bonuses for the year's results and also for good work are now paid from this fund. As can be seen from monthly pay-rolls, in many cases workers operating machines, raising animals, and cultivating plants, who performed their tasks honestly and competently, received 200, 250 and 300 rubles a month. And this is without bonuses making up 30 to 50 per cent of their basic earnings, depending on the volume of the work done, its quality, and its completion on schedule. Thus, workers on the Lenin State Farm now receive payments that are two-three times as high as the average for the country as a whole. In 1973 the farm's profits were even higher than in the preceding year and its bonus payments also increased considerably.

Still another experimental system of material incentives was introduced in 300 state farms in 1973. Under its arrangements the basic wages funds remain constant, while bonuses are paid at the end of the year in accordance with the following rates:

- 2.5 per cent of the individual's yearly wages per each per cent over and above the gross production level as compared with the one achieved over the three preceding years;
- 5 per cent of the worker's basic yearly wages per each per cent over and above the labour productivity level as compared with the preceding year.

Such a system stimulates the initiative of workers. More accurate records of working time are now kept, and team leaders and specialists have become more exacting. Under this system practical calculations, concerning ways to reduce costs and labour inputs, become of great importance in organising particular technological processes. Many persons acquire additional skills and the productivity of labour increases substantially. As a result, workers' earnings are growing.

The use of new forms and methods as regards material incentives for collective farmers and state farm workers thus creates a closer linkage between their earnings and the results of their labour activities, and heightens their interest in increasing agricultural production. Both collective and state farms are continuously searching for further improvements in payment systems under which a definite minimum of wages will nevertheless be always guaranteed.

10. SOCIAL SECURITY ON COLLECTIVE FARMS

Under capitalism the volume of means of livelihood that are needed for sustaining and renewing labour power is primarily determined by wages. The mechanism of capitalist exploitation objectively operates in opposition to any extensive development of collective forms of meeting the needs of the population and of a free distribution of any portion of the social product. If, however, such forms do appear they are financed by a part of earnings that is exacted by way of direct taxes and contributions. Accordingly, while free services do exist under capitalism, they generally do not represent any substantial addition to the incomes of workers. In the USSR, for example, the proportion of wages in all forms of income (without holiday payments) is 70 per cent, while in the United States it is 90 per cent.

Socialism alone guarantees social support to each worker in a number of cases apart from wages. This includes the acquisition of professional skills, medical services, the education of children, and financial assistance in case of physical disability. Just as other members of society, Soviet farmers have a right to free medical services, education, and old-age pensions, and most of this is provided by the government.

In the Soviet Union all the above-mentioned types of social services taken together are referred to as "social consumption funds". Like wages, they serve to meet the material and spiritual needs of the Soviet people. As socialist society develops, the role of social consumption funds in the life of farmers as well as of other workers increases. In 1940 the payments and preferences received on the average by every Soviet citizen were 24 rubles. In 1974 they were 329 rubles, and currently more than half of them are paid in monetary form. The share of social consumption funds in the total revenues of collective farm members and workers has also increased substantially (Table 8).

Table 8

The Share of Social Consumption Funds
in the Total Incomes of Collective Farmers and Workers (per cent)

	1940	1965	1974
Share of social consumption funds in the total incomes of:			
families of collective farmers	4.9	14.2	19.9
families of workers	14.5	22.8	22

It may be seen from these data that the share of social consumption funds in the population's total income increased sharply between 1940 and 1974. Now every farmer receives approximately one-fifth of his income through social channels. This does not include, moreover,

the expenditures of the government and of collective farms on the construction of dwellings, schools, and cultural and welfare institutions, and medical facilities. These additional expenditures are estimated at 150 rubles per family per annum.

The first legislative acts of Soviet power raised the question of social security and insurance for the peasants. In particular, the Decree on the Socialisation of Land of February 19, 1918 (Article 14) stressed that all citizens engaged in agriculture must be insured by the government against old age, sickness, and mutilation incapacitating them. This principle was confirmed in the Decree of the RSFSR Government of October 31, 1918, in which it was stated that all persons who derive their livelihood from labour are entitled to social security.

The Civil War and foreign armed intervention prevented the implementation of this provision, and a special organisational form of social security—peasant societies for mutual assistance—developed in the countryside at that time. In September 1924 the Soviet Government even approved an Instrument on Peasant Societies for Mutual Assistance. Following the collectivisation of agriculture, mutual assistance funds were established on collective farms, as well as special funds for assistance to physically disabled persons and retired workers, and also for the support of orphans. The latter were formed by deducting of a certain percentage of the value of the farm's gross output for the purpose. That system of social security on collective farms existed until 1965. Under its arrangements all social security payments were financed by the collective farm concerned.

In 1964 the government adopted a special law providing for a unified system of social security for collective farm members. This was initiated in 1965 and provided for payments of old-age pensions as well as subsidies associated with maternity leaves. These types of social security are financed by both collective farms and the state. Simulta-

neously a decision was passed on the establishment of government-financed pensions and social security for collective farm chairmen, specialists, and machine operators. The rights to social security for these categories of collective farmers as well as for all state farm workers were now the same as those for industrial and office workers.

In the case of collective farmers, however, a part of their needs for social services is also met by their own collective farms. As a consequence, the level of pensions, grants, and cultural and welfare facilities depends in part on the economy of each collective farm. It is, therefore, possible to speak of a special social security system for collective farm members. Such an internal system is usually organised in the form of the social consumption fund of a given collective farm.

In terms of their purpose, social consumption funds on collective farms may be aggregated into two large groups: 1) an assistance and pension fund; 2) a cultural and welfare fund. The first covers pensions, payments for temporary disabilities (including maternity leaves), and the current expenditures of old-age homes as well as *ad hoc* assistance grants. The second serves as a source for up-keeping nurseries and kindergartens, for the acquisition of new skills, and for the support of centres of cultural services and of mass cultural activities programmes.

A listing of the items that are met from the social consumption funds of collective farms is suggestive of the type of social services that are available to collective farmers. Over the 1960s the size of the social consumption funds per collective farmer increased by 4.3 times. There are over 12 million retired collective farmers in the country today.

The correct combination between wage payments and payments from social consumption funds has a very important role to play in governing the internal structure of social relations. It indicates the level of development of a farm's social economy and the measure of development of collectivism in a given co-operative. Usually, collective

farms with larger incomes and higher rates of wage payments also possess larger social consumption funds. Similarly, whenever the development of such funds is emphasised, the interest of collective farm members in strengthening the collective farm's economy increases, manpower resources are employed more effectively, and the advantages of collective labour are manifested more clearly.

Let us consider, for example, the Semiluksky Collective Farm, which is located in Voronezh Region. Its rates of payments are higher than those of neighbouring state farms and industrial enterprises, and its economy is able to raise them even more. But a general meeting of collective farm members has decided to increase substantially the financial resources that are contributed to its social consumption fund. A free care for children in nurseries, kindergartens, and a summer Young Pioneer camp was introduced, as well as free meals for collective farmers engaged in work on fields and distant animal farms. Aside from providing free medical services, the local medical centre also provides drugs free of charge. In addition, more than a hundred collective farm members spend their vacations at rest homes, sanatoria, and resorts each year at the expense of the collective farm itself, including the cost of transportation.

It has already been noted that a centralised social security fund was established in 1965. It is formed both by payments from collective farms, who contribute 5 per cent of their gross income, and by contributions from the state budget. Table 9 indicates the size and composition of the centralised social security fund for collective farm members between 1965 and 1975.

Substantial changes have taken place in the methods of financing the centralised social security fund since its establishment. In 1965 total government contributions to that fund were only one-half of the contributions of collective farms, whereas today they are over twice as large as

Table 9
Size and Composition
of the Centralised Social Security Fund for Collective Farmers

	1965	1970	1975
Total (thous million rubles)	1.2	2.5	3.5
including:			
contributions of collective farms	0.8	1.1	1.1
government contributions	0.4	1.4	2.4

those of collective farms, and the government has assumed nearly two-thirds of the expenditures bearing on the payment of old-age pensions and grants to collective farmers from this fund. Between 1965 and 1974 government contributions increased six times. Over that period the average size of collective farmers' pensions increased by 2.5 times. Today collective farmers may receive a pension of up to 120 rubles per month.

Moreover, the centralised social security fund is not the only source of pensions and grants to collective farmers. For, in addition, collective farms create their own social security and aid funds that are financed from their own net incomes. For the USSR as a whole the average size of that fund was 156.7 million rubles between 1970 and 1972. By decision of its general meeting a collective farm may make payments in addition to the pensions that are paid from the centralised social security fund, and may also fix personal pensions for veterans of the collective farm movement. Material assistance is also provided to collective farm members who have become physically disabled.

Upon attaining retirement age all collective farm members have an equal right to pensions and grants from the centralised fund. As for social security payments from a collective farm's internal pension and aid fund, the collective farm itself decides this matter. As do all other

Soviet citizens, collective farm members have a right to an old-age pension at the age of 60 in the case of men, and 55 in the case of women. The average life expectation in the USSR is currently more than 70 years. In determining the general level of the total pension (both basic and supplementary) the number of years that the person has worked on his collective farm is taken into account as well as the quality of his work, and his special contributions to developing the farm's social economy.

The very fact that both the rate of wage payments and the size of pensions depend on the economy of the entire collective farm sector as well as on the economy of a given collective farm serves to consolidate the farm's collective and also influences the quality of work and the striving of collective farm members to improve their skills.

Many collective farms arrange for less difficult types of work for their members several years before their retirement. For example, the Kommunistichesky Mayak Collective Farm in the Stavropol Territory has reduced the minimum of labour contribution to the farm's social economy during the last five years preceding retirement to 210 days per year for men and 120 days for women.

Much attention in the social security system in the countryside is devoted to women and children. In particular, single mothers and mothers of large families receive substantial grants. Families who lose their breadwinners also receive pensions. All expectant mothers receive maternity benefits. Since 1973 these have been equal to their full earnings, irrespective of the length of service. Grants for the care of sick children have also been substantially increased.

By decision of the Third All-Union Congress of Collective Farmers (1969) a unified system of social insurance for collective farm members has also been introduced (since 1970). A centralised social insurance fund has been established for that purpose to which collective farms contribute 2.4 per cent of their total remuneration fund. In 1974 this

fund amounted to 410 million rubles for the country as a whole.

No unified system of social insurance for collective farm members existed before 1970. On some collective farms the size of grants related to temporary disability was determined in accordance with the person's length of service, while on other collective farms this factor was not taken into account. Some collective farms paid grants during the entire time of illness, while others paid them for not more than one or two months. Similarly, there were also differences in the manner in which the ratio of grants to earnings was determined. Currently, however, all these issues are decided in a standardised way. Payments that are made to collective farmers from the centralised social insurance fund include payments in the event of temporary disability, payments associated with the birth of a child, payments for funeral expenses; passes to sanatoria and rest homes are paid from this fund in full or in part. The organisation and management of social insurance for collective farmers is carried out by social insurance commissions under collective farms' trade union committees and district trade union committees.

The current system of social insurance for collective farmers is governed by the following major principles:

- it applies to all collective farmers in the country;
- payments are made from social funds without any deductions from earnings;
- a variety of forms and a high level of material security payments;
- there exists a direct relation between the right to receive a particular form of grants, their size and duration, and the person's labour contributions to the collective farm's social economy;
- the organisation of social insurance rests on a wide democratic basis and on an active role of trade unions.

Payments related to temporary disability may not be paid for more than five months a year. In case of

illness the maximal size of payments is 90 per cent of the farmer's earnings. Payments are also made when there is a need to take care of sick member of a family (up to three days), and of a sick child under 14 years old (seven to ten days). A collective farm member is entitled to either free accommodation in a sanatorium (for not less than 15 days) or else he pays 30 per cent of the costs. Special privileges are provided in case of serious illnesses. In granting aid the length of service of collective farm members is calculated in terms of the duration of their uninterrupted work within the given collective farm, although in some cases their work on other collective farms, institutions, and organisations is also taken into account.

In recent years cultural and welfare facilities have become an increasingly important item in social consumption funds. The establishment of centralised social security and social insurance funds for collective farmers and the growth of collective farm incomes make it possible to devote much more attention to the construction and improvement of facilities for children, to collective farm rest homes, and cultural institutions, and to the development of sport activities. All this is closely related to the overall social progress of rural communities. Before the establishment of a unified system of social security for collective farmers the expenditures of collective farms for pensions and other social payments frequently constituted 60 to 70 per cent of all their social consumption funds, whereas today this situation has changed substantially. In 1970-1972 the average level of funds for cultural and welfare facilities was 692.5 million rubles, i.e., more than 58 per cent of all the social consumption funds of collective farms. If one excludes from these general funds those means that serve to provide material incentives for collective farmers, the share of cultural and welfare funds within the remaining sum will be 81.6 per cent.

The availability of the required welfare and social enterprises within collective farms, the organisation of

public services, and the existence of children's institutions serve to increase the labour activity of collective farm members as well as their interest in the development of social production. Both the degree to which the everyday life of a person is comfortable and the extent to which needed services are available to his family influence his general disposition and his capacity to work, and in the final count, the productivity of his labour as well. Lenin called such forms of joint satisfaction of needs as dining rooms, laundries, and facilities for children "shoots of communism" that serve to liberate women from housework.

Since women represent approximately one-half of the able-bodied collective farmers and state farm workers, it is highly important to provide their children with nurseries and kindergartens. There were 50,700 such institutions that were attended by over 2.5 million children in 1975, and in the case of nurseries more than 80 per cent of all expenditures per child were met from social consumption funds, while in the case of kindergartens this figure was 74 per cent. In the more advanced farms parents do not have to make any payments for the care of children who are in nurseries. Between 1960 and 1975 alone the number of children in nurseries and kindergartens increased by over four times. At the present time it is the rural population of the USSR that is the primary contributor to demographic growth. Overall child mortality has been reduced by more than 90 per cent during the years of Soviet power.

Experience has shown that those collective and state farms that possess dining rooms and facilities for the care of children usually encounter no difficulties in recruiting skilled personnel and that many young people work on such farms. This is causing collective and state farms to increase their investments into non-productive funds. In 1965 the total sum of such investments on collective farms was 613 million rubles, and 1,073 million rubles in the case of state farms, whereas in 1975 these figures increased to

1,525 million rubles, and 2,183 million rubles respectively. Over that period the government also nearly doubled its own investments for these purposes.

The system of social consumption funds on collective and state farms also has an important role to play in raising the level of skills, in housing construction in the countryside, and in providing medical services for the rural population. These aspects will be considered more closely in the chapter that follows.

11. SOCIAL PROGRESS OF SOVIET COUNTRYSIDE

But what has the development of collective and state farms and the Soviet approach to the development of agriculture actually given to farmers? According to an old saying, things become clear through comparison. To see the social progress that has been achieved by rural communities let us compare improvement in their general conditions of life over a specified historical period with that in towns.

As two distinct socio-economic categories the countryside and the towns have stood in opposition over the centuries. Ever since towns separated into independent administrative, economic and political units they always exploited the countryside. No matter how society developed, the countryside was always the poorer, more backward, and more oppressed. As a rule, even the working people of the city lived better than the small peasants. It is, therefore, not surprising that for rural residents social progress was always measured in terms of the overcoming of the gap between rural and urban living conditions.

In capitalist society the opposition between town and country is largely expressed in terms of an antagonism between urban exploiting classes and rural working masses. As capitalism emerged and developed within agriculture itself, it intensified these contradictions even further. The antagonism between town and country

emerged long before capitalism—already in slave-owning societies, and the contradictions between them have by no means weakened under capitalism.

First, within the overall economic structure of capitalist society agriculture continues to occupy a subordinate position and its development continues to be governed by urban capital. Second, under capitalism agricultural production continues to be closely related to the private ownership of land and to rental payments. Third, the bourgeois state is now actively participating in the exploitation of the countryside through the state-monopoly system of regulating the economy.

The social consequences of technical progress in all developed countries depend on the type of social system within which it is taking place. In spite of the very substantial development of productive forces in American agriculture, for example, American farmers continue to remain "second-rate citizens" in their own country, "Lilliputs", as it were, "in the country of giants". By comparison with city residents technical progress did not bring any substantial improvements to the social position of the American farmers. During the initial post-war years the per capita income of rural residents was 61 per cent of that of urban residents. By 1960 this indicator had declined to 54.5 per cent. In the early 1970s the incomes of the rural population approached only three-fourths of the net income of urban residents. But it should also be kept in mind that more than one-half of the net income that is derived from agriculture in the United States goes to large farms, numbering less than 10 per cent of the total number of farms in the country.

Small farms are no longer able to sustain themselves through agricultural production, and their owners are forced to seek a supplementary source of income. The official report of the United States Department of Agriculture, published in 1973, notes that if agricultural production were the only source of farmers' incomes, their

average income would be only 47 per cent of the income of urban residents.

It should also be stressed that the labour productivity of farmers has been increasing more rapidly than that of workers in processing industries. Bankrupt farmers are abandoned to their own fate in the United States. As a rule, they join the ranks of the growing army of urban unemployed. Moreover, they have the least opportunities for finding employment since they do not possess any urban skills. In this respect the position of farmhands is particularly difficult. In most cases they do not even have their own trade unions and, in growing numbers, gradually sink to the role of seasonal help. Truman Moore, the author of the book *The Slaves We Rent*, published in New York in 1965, observed that there were more than two million people, who sought employment on capitalist farms every year. (According to official statistics, the total number of persons employed in agriculture in recent years was approximately 4.5 million.) American newspapers agree that the position of seasonal agricultural labourers is that of virtual slaves who work for a pittance from dawn until dusk, and live in unsanitary conditions.

The continuing opposition between town and country under capitalism today is also finding expression in a rapid decline of small towns and rural communities on the one hand, and a frightening growth of the size and numbers of large urban metropolises, on the other. The bankruptcy of small family farms has brought to the brink of financial catastrophe not only their owners but also many residents of small and very small towns and rural communities who were engaged in servicing agriculture. While the number of farms in the USA decreased from 4,600 to 2,800 between 1960 and 1974, the population of rural towns and communities decreased by 6.5 million during this same period. Today there are 156 such "urban-type" settlements whose residents number less than 25 persons. Thus, the onslaught of towns on rural communities continues.

To overcome this blatant social injustice has been one of Communists' objectives from the very first. "The transformation of agriculture," wrote Karl Marx, "should become the alpha and omega of the future revolution."¹ One of the tasks of the dictatorship of the proletariat that are defined in the *Communist Manifesto* is "gradual abolition of the distinction between town and country".² This is not possible under capitalism, because exploitative relations between classes, oppression of the country, social inequality, and opposition of the interests of urban and rural population constitute the very essence of capitalist relationships between town and country. Socialism, on the other hand, is the abolition of classes. "In order to abolish classes," wrote Lenin, "it is necessary, first, to overthrow the landowners and capitalists. This part of our task has been accomplished, but it is only a part, and moreover, *not* the most difficult part. In order to abolish classes it is necessary, secondly, to abolish the difference between factory worker and peasant, to make *workers of all of them*. This cannot be done all at once. This task is incomparably more difficult and will of necessity take a long time."³ Lenin emphasised that in order to abolish classes "it is necessary to abolish the distinction between town and country".⁴

Socialism alone is able to overcome not merely the opposition between town and country, but also socio-economic distinctions between them. Exploitative relations do not exist in the USSR. The two friendly classes—the working class and the collective farmers—are socially homogeneous in essence, and share a common objective, namely, the building of communism. Their production relations are based on two forms of single socialist ownership. They also share equal political and civil rights. There

¹ K. Marx/F. Engels, *Werke*, Bd. 27, Berlin, 1965, S. 314.

² Karl Marx and Frederick Engels, *Selected Works*, in three volumes, Vol. 1, p. 127.

³ V. I. Lenin, *Collected Works*, Vol. 30, p. 112.

⁴ *Ibid.*, Vol. 29, p. 421.

is no basis accordingly for opposition of interests between collective farmers and workers. It was only because of the poverty of the countryside that took shape historically in tsarist Russia that there were no material prerequisites for a simultaneous overcoming of all types of socio-economic distinctions between town and country.

Lenin described the living conditions of peasants under tsarism in the following words: "The Russian peasant has been reduced by labour service, taxes, and capitalist exploitation to such a miserable, starvation standard of life as seems incredible in Europe. In Europe such social types are called *paupers*."¹ The average level of income of a working peasant in 1913 was nearly one-third of that of an industrial worker. Nevertheless, peasants were expected to make a number of substantial payments and contributions (land levies, rent and insurance as well as taxes, etc.), which amounted to approximately 20 per cent of their incomes from agriculture.

The length of the peasant's average working day in 1913 was approximately 11 hours, and 16 hours during the summer period. At the same time the general cultural level in the pre-revolutionary countryside was very low, and the overwhelming majority of peasants were illiterate. Practically no medical assistance was available in the villages (there was one doctor for 25 thousand peasants), and most peasants were not even able to give their children a primary education. Their diet remained at a poverty level, and 65 per cent of the peasants did not gather enough grain to last until the following harvest. Rural population mortality was twice as high as that in towns. In this connection Lenin observed in 1901: "The last ten years have been marked, not only by the ruin of the peasantry, but by its veritable extinction, which has proceeded with such an astonishing rapidity that no war, however prolonged and bitter, has claimed such a host of victims."²

¹ V. I. Lenin, *Collected Works*, Vol. 15, p. 127.

² Ibid., Vol. 5, p. 253.

In 1967 the Soviet Union celebrated the 50th anniversary of the Great October Socialist Revolution, and in 1972 it marked the 50th anniversary of the formation of the Union of Soviet Socialist Republics. If we regard 1935 as the year of the final establishment of the collective farm system in the Soviet countryside, then in 1975 that system was only 40 years old. During that short period of time, however, collective and state farms have succeeded in liberating the peasantry from class stratification and from ruin and poverty, and have created wide opportunities for enhancing the standard of living in the countryside.

During the years of Soviet power the welfare of the farmers has increased more rapidly than that of urban residents. While the real per capita income of industrial workers increased 9.4 times between 1913 and 1975, the incomes of farmers increased more than 13 times. Taxes and contributions currently constitute less than 3 per cent of the farmers' overall agricultural income. As their income increased, the diet of farmers, too, has improved, as indicated by the data in Table 10.

Table 10

Yearly per Capita Consumption of Foodstuffs in Farmers' Families

	1913*	1938	1960	1971
Grain products, kg	216.8	271.1	481.4	477.7
Potatoes, kg	97.1	174.8	215.9	199.6
Meat and bacon, kg	11.7	20.9	35.1	48.5
Milk and dairy products, kg	85.6	126.6	306.4	368.7
Eggs	14.8	59.3	152	291

*Consumption of poor and middle peasants.

It may be seen from the above data that by comparison with the pre-revolutionary period a substantial improvement had already taken place in the Soviet farmers' consumption by the time of the Second World War.

First, it had increased in bulk and, in addition, its quality had improved. Farmers began to consume much more meat, milk and eggs as well as more bread and potatoes. In the post-war years the structure of their consumption began to change. As their incomes increased, farmers began to consume less bread and potatoes and more animal products. In 1971 they were consuming several times more meat, dairy products and eggs than in 1938.

The distribution of family expenditures is generally viewed as one of the major indicators of social progress. As the level of social development of a society increases, the share of household expenditures on cultural and welfare facilities and industrial goods also increases, while that of food expenditures falls. Accordingly, in order to study changes in the material and cultural standard of living in the USSR, family budgets of working people have been examined in a systematic manner. An analysis of such budget data shows that between 1940 and 1975 the share of expenditures on food within the overall income of a collective farm family declined from 67.3 to 37.1 per cent, while the share of the expenditures on cultural and welfare facilities increased from 4.4 to 15.4 per cent. While farmers spent 10.9 per cent of their income on the purchase of fabrics, clothes and footwear in 1940, today that figure is 15.7 per cent, while the corresponding figures for the acquisition of furniture, goods for cultural needs and recreation, and household appliances are 1.1 and 5.9 per cent respectively.

Similar tendencies also characterise the budgets of workers' families as well. Yet it is in the rural communities that they were especially striking. As a result, distinctions between the structure of expenditures in farmers' and workers' budgets are being rapidly obliterated. In particular, the share of income that farmers spend on clothes, footwear and fabrics is now the same as that of the workers, and their expenditures on welfare facilities are also rapidly drawing nearer together.

The level of farmers' welfare is also measured by the increase in their savings. There were 5.7 million accounts in rural savings banks in 1940, whose overall volume was 149 million rubles. By 1960 these figures had grown to 13.9 million and 2,161 million rubles respectively, while in 1975 they were 27.7 million and 24,908 million rubles. Thus, the total sum of deposits increased by more than 12 times since 1960 alone, while the number of depositors increased by more than 13.8 million persons.

Similarly there has been a rapid development of rural trade activities. No permanent network of shops of any kind existed in rural communities in tsarist times. One could only find a tavern, itinerant merchants and occasionally a modest shop. Between 1928 and 1975 the number of retail trade establishments in rural communities increased from 87.4 thousand to 335.9 thousand, while the number of public catering establishments (restaurants, canteens, and cafes) increased from 4.8 thousand to 85.6 thousand.

Earlier the farmers' need for food was largely met from unprocessed agricultural products. Today, however, there is a growing demand in the villages for food products that are prepared by the food-processing industry. Since the early 1960s, for example, the sale of food products to rural toilers has increased by more than 120 per cent. More specifically, the sale of factory-produced bread and bread products increased by 120 per cent, that of meat products twice, of animal fats by 240 per cent and of dairy products by 350 per cent.

The level of monetary incomes, however, and the structure of household budget expenditures are not the only indicators of social progress. In particular, bridging the gap between rural and urban standards of living also implies the abolition of lags in education, culture, medical services and welfare facilities. Important factors of social progress and development include the population's literacy and the number of intellectuals, specialists with a higher

and secondary education, and of specialists who are technically skilled in working with modern machines and equipment. As the number of persons within such social layers grows, productive forces may be employed more efficiently and both the level and quality of life improve. Selected data are presented in Table 11 concerning the level of literacy of the rural population (according to census data for the corresponding years).

Table 11

The Literacy Level of the Rural Population

Year	Share of rural population in total population (per cent)	Percentage of literate persons within the overall rural population between the ages of 9 and 49
1913	82	23.6*
1939	68	84.0
1959	52	98.2
1970	44	99.5

* 1897

Thus, 82 per cent of the population resided in villages in pre-revolutionary Russia and more than three-quarters of these persons were illiterate.

In addition, the level of literacy in the countryside among men was half of that in towns and, among women, 73 per cent. As a result of programmes aimed at eradicating illiteracy, the percentage of literate persons had already increased to 50.6 per cent by 1926, i.e., had more than doubled. Today there is practically no difference in the level of literacy in the countryside and in towns, in spite of the fact that the relative share of rural residents has decreased to almost a half, with, as a rule, the more talented and more literate persons leaving for the city. Between 1966 and 1970 the number of secondary schools in the countryside increased from 17.6 thousand to

25 thousand, and from 14.4 thousand to 19 thousand in towns. Thus, both the number of schools and the rates of growth in secondary education are larger in rural communities than they are in towns. Currently there is a country-wide transition to compulsory secondary education.

The abolition of illiteracy in rural communities was also accompanied by a substantial increase in the number of persons possessing higher or secondary education. Their numbers grew at a higher rate than in towns, and by the end of 1974 such persons constituted more than 60 per cent of the residents of rural communities of working age.

The rapid pace of technological progress has called for large-scale programmes for the training of specialists in the use of mechanised equipment. Before the Revolution generally the only specialist in a village and the most skilled person was the local smith. An important consequence of the general cultural development of the Soviet countryside has been a growth in the numbers of persons who are skilled in the use of mechanised equipment. This serves to eliminate heavy physical labour. The farmer now works an average of eight hours a day. In pre-revolutionary agriculture the peasant generally performed himself all forms of work required by both animal husbandry and the cultivation of plants. In contrast to this, on collective farms the type of farmer who performs all types of tasks is being replaced by workers specialising in specific technological operation. In short, the number of non-specialised workers is declining, while that of specialists is growing. Between 1926 and the 1960s the number of workers who did not possess specialised skills decreased by 74 per cent, while the number of those who specialised in the performance of mechanical tasks in agriculture increased by almost 600 times and the number of specialists in animal husbandry increased by 150 per cent. Today every fourth milk-maid operates a milking machine. Industrial work is thus combined with agricultural labour.

The overcoming of socio-economic distinctions between town and country, one of the most important aspects of social progress, includes the overcoming of cultural differences. The experience of many collective farms has shown that increases in the level of cultural services and welfare facilities rendered to collective farmers bring forth a growth in the productivity of labour, an improvement in the quality of productive activities, and increased desire on the part of collective farmers to remain at their current place of work.

It was the aim of government policy in tsarist Russia to keep the peasants uneducated. The local church and the local drinking house were viewed as the only proper meeting places and their development was encouraged. Libraries were extremely rare. Cinemas, clubs, theatres, and museums were practically non-existent in rural communities, and no one gave any thought to encouraging sports activities. There was one library per each 11,600 rural residents in Russia, and their book collections averaged 30 volumes and periodicals—a "size" matched by that of the personal libraries of millions of farmers today. There were only 100 rural clubs in the entire country. "There is no other country," wrote Lenin, "so barbarous and in which the masses of the people are *robbed* to such an extent of education, light and knowledge—no other such country has remained in Europe; Russia is the exception. This reversion of the masses of the people, especially the peasantry, to savagery, is not fortuitous, it is *inevitable* under the yoke of the landowners. . . ."¹

The data of Table 12 do not call for special comments. They reflect a vast leap in the growth of cultural services of the rural and urban residents. While there were only three books for every 100 rural residents in 1913, there are 550 today. The newspaper *Selskaya zhizn* (Rural Life) has a circulation of more than 6.5 million, that is twice larger

¹ V. I. Lenin, *Collected Works*, Vol. 19, p. 139.

Table 12

Number of Libraries and Clubs

	1913*	1940	1975
Large libraries, thous			
urban	2.6	18.5	36.1
rural	11.3	76.9	95.3
Number of books and periodicals, millions of copies			
urban	5.0	120.6	867.3
rural	4.4	64.2	673.6
Number of clubs, thous			
urban	0.1	10.0	20.2
rural	0.1	108.0	114.9

* Within current boundaries of the USSR.

than the circulation of all newspapers in pre-revolutionary Russia. The total number of rural subscriptions to newspapers and journals is currently over 107 million. This is an average of four periodicals for each rural family. More than 42 million rural residents use library services, and the growth in the number of clubs has been especially important for rural communities. The possibilities that they provide for meaningful uses of the leisure time, especially during winter months, make the lives of the farmers richer and more pleasant.

Modern mass media are an important factor in enhancing the farmers' cultural level. There were only 3 thousand post offices in the rural areas of Russia in 1913. Today there are 60 thousand operating 434 thousand mail boxes. While only 9.2 per cent of the collective farms possessed telephones in 1940, 99.6 per cent of them possess telephones today.

In 1928 there were no radios in the villages. Today the number of public radio receivers is 43.5 million, while television reaches more than 40 per cent of the rural

population. Together with the growth in the number of cities and the improvement of transportation services this has brought all villages and rural communities into closer contact with towns and has improved substantially the cultural services that are available to rural residents.

Medical service is expanding at more rapid rates in rural communities than in towns. In 1940 the number of hospital beds in rural areas had increased by 230 per cent in comparison with 1913, and this figure rose to 650 per cent in early 1960. Between 1966 and 1970 alone 79.3 thousand hospital beds were added to rural hospitals, while in terms of medical personnel available to the population the USSR occupies the leading position in the world.

Physical education and sports are also developing rapidly in rural areas. Large-scale sport societies, such as Urozhai and Kolgospnik, have been established, and the country's national teams include sportsmen from rural communities. Sports have become the principal form of leisure activities for rural youth.

Improvements in the welfare of the population have led to a sharp increase in the average life expectancy, which was 2.2 times greater for the years 1965-1966 than in pre-revolutionary Russia. The average rate of mortality has declined to one-fourth since the advent of Soviet power.

Medical services as well as education are free in the USSR and are an important responsibility of the Soviet state. In the United States as well as in several other capitalist countries medical services are generally entrusted to private organisations under arrangements in which the patients bear the brunt of medical expenditures (approximately 75-80 per cent in the United States). Accordingly, the treatment of serious and prolonged illnesses is often inaccessible to a large proportion of the working people.

It is difficult and often impossible to create a single image of the contemporary Soviet countryside. There

are approximately 470 thousand rural communities in the USSR today with an average of 225 residents. Among them there are small farmsteads as well as rural communities that hardly differ from urban settlements. It would be misleading to view in terms of a single concept such different types of rural settlements as a Byelorussian village, an *aul* in the mountains of the Caucasus, an Uzbek *kishlak*, and a *stanitsa* in the Volga steppes, since each possesses specific national, geographic, production, and other features. But in all cases their development during Soviet years has been marked by continuous social progress.

It was only 50 or 60 years ago that the Russian countryside was characterised by world sociologists as something altogether incredible in terms of civilised standards. Superstitions, prejudices, an almost complete absence of literate peasants, dismally poor dwellings in which cattle lived together with people during winter months, epidemics, a high mortality rate, and drunkenness were ever present features of Russian village life. To complete the social picture of the village in tsarist Russia one should also note the individualistic structure of peasant households, the oppression of landowners, repeated harvest failures, and almost total absence of modern agricultural knowledge and skills. The situation in outlying areas of Transcaucasia and Central Asia was even worse.

Under Soviet power the social features of the countryside changed in a fundamental way. For purposes of comparison we shall not consider the villages of Moscow Region or of Baltic republics or even those of the Ukraine. Let us consider instead an area in the middle-Volga region that was typical of pre-revolutionary Russia in terms of poverty and absence of culture, and whose village communities were dying out in those times. Anyone who visits a collective or state farm in Gorky Region today, however, will find nothing to remind him of that region in tsarist times. Let us consider the Yedinstvo Collective Farm,

Lukoyanov District, for example. It has many farm machines. Favourable production conditions are combined with days of rest and paid vacations for all collective farmers. There is a community centre, a library, a school, a nursery and kindergarten, a department store, a canteen, a steam bath, a hospital, a post office and a House of Young Pioneers. Most farmers own a television set. The farm's residents include 15 agricultural specialists, 37 teachers and three doctors. There are 50 children attending its music school and there is an amateur theatrical group, a choir, an orchestra, as well as a number of sport sections. There are many hundreds of similar collective farms in Gorky Region alone.

Let us consider another typical example. In Byelorussia's Grodno Region, which had one of the lowest standards of living in tsarist times, there is the Progress Collective Farm. Formerly there were 80 farmsteads and 14 small villages on its present territory, an arrangement that was typical for the Byelorussian system of settlement. Today rural communities of the urban type have replaced the former wretched villages, and the architect who designed the farm's centre, the now famous Vertilishki, and the farm's chairman have been awarded a state prize in architecture. Delegations come to this farm from the entire country to gain new knowledge in rural construction. At the centre of Vertilishki there is a square with a fountain, a clock tower, a club, a library, a television room, and a cinema. The collective farmers have created a choir, a dance and a song ensemble, whose fame has spread far beyond the farm. Collective farm members live in comfortable two-storey houses that are well fitted into the environment. These houses possess all modern conveniences. Everything that a contemporary person may need is to be found in this rural community. Its members include 50 specialists with a higher education. The Byelorussian Republic's government has adopted a special resolution according to which new collective farm centres will

be built throughout Byelorussia on the pattern suggested by Vertilishki.

The Programme of the Communist Party of the Soviet Union notes that as they move towards communism villages will be gradually transformed into urban-type communities with comfortable homes, communal services, welfare facilities and cultural and medical establishments. On many collective and state farms a lot is already being done today to ensure the rational location of production buildings, public structures and residential houses, to supply electricity and gas to rural communities, to improve roads, develop parks, and provide services and recreational facilities.

During the past three years there have been three competitive exhibitions of proposed designs for village redevelopment in which more than 700 collective and state farm villages have participated. In order to accelerate the reconstruction of rural communities, a USSR Ministry of Rural Construction was established, which has developed a programme for expanding rural reconstruction activities, and has spent 25,000 million rubles for that purpose during the past five years.

Intensive activities relating to the development of rural communities and to integrated schemes of regional planning are currently taking place in all regions, territories, and republics. These designs envisage the creation of modern rural communities that are optimal in size and that possess all types of cultural and general communal services. Over 90 per cent of all rural districts already have such projects of local community planning, and more than 34 thousand collective and state farms have already designed similar projects for their own communities.

While villages developed in a spontaneous manner in the past, especially before the October Revolution, often in inconvenient localities (frequently the peasants were driven to low-lying areas, and to swamps), the decisions relating to the location of rural communities are now taken

with the help of expert commissions. Such decisions take into account the views of medical specialists, of the residents themselves, and of the representatives of local government bodies. New sites for rural communities are chosen at scenic locations, on warm southerly slopes of hills, and close to wooded areas. All factors bearing on a healthy microclimate are taken into account. "The question of improving the living conditions of the peasants, who constitute the overwhelming majority of the population," wrote Lenin, is "one of fundamental importance."¹

While one of the most important problems that is being successfully solved by socialism concerns the abolition of fundamental distinctions between town and country, an equally important problem in our country has been the social transformation of outlying areas of the Union of Soviet Republics that was created in 1922. At the time of the Revolution most of these outlying areas in terms of their social structures were at the level of feudalism.

In terms of their economic development Central Asia and Kazakhstan were typical colonial countries. Poverty, disease, and lack of culture was the fate of the overwhelming majority of their peasants. In particular, 90 to 96 per cent of the population were illiterate in the Central Asian republics at the beginning of the 1920s and the corresponding figure for Kazakhstan was 82 per cent. Forecasts made at the beginning of the 20th century envisaged that it would require 4,600 years to achieve universal literacy in the Turkestan Territory (as the territory of the present Central Asian republics was then called). Immediately after the October Revolution, however, at the initiative of Lenin, a policy was adopted to quickly overcome the backwardness in the outlying national regions both in industrial production and in agriculture.

The Soviet government allocated tens of millions of rubles for irrigation purposes in Turkestan as early as 1918. Decisions to provide food, financial and technical aid to

¹ V. I. Lenin, *Collected Works*, Vol. 33, p. 392.

Azerbaijan, to help strengthen the economies of Byelorussia, Armenia, and other republics were taken while the Civil War was still raging.

The formation of the USSR marked a new stage in the development of agricultural outlying areas. Comprehensive assistance to those areas became a matter of state policy. Over many years the budgets of a number of Union republics were largely supplemented from the all-Union budget. The population of these republics, because of their difficult material position over many years, was completely or partially exempted from agricultural and other taxes, while the purchase prices of agricultural produce grown in these backward regions were established at a level that would encourage their economic development. Very substantial aid was also given to these republics and regions for purposes of cultural development, for raising the level of education, and the training of specialists.

These prolonged efforts have produced significant results. Today Central Asia stands for the first-rate cotton fields of Uzbekistan and Turkmenia, the newly developed virgin lands of Kazakhstan, and the blossoming orchards and new animal farms of Kirghizia and Tajikistan. Since the formation of the Soviet Union the production of cotton has increased 120 times in Uzbekistan, and 90 times in Turkmenia, while Kazakhstan currently produces almost 30 times more grain than in 1922. Nearly the entire population of these republics has become literate and about one-half of that population has acquired a higher or secondary education. The volume of industrial production has increased 600 times in Kazakhstan, more than 500 times in Tajikistan, more than 400 times in Kirghizia, and more than 240 times in Uzbekistan. While far more modest achievements in the capitalist world are often referred to as "economic miracles", they are not regarded as miraculous in our country, where they are a natural outcome of socialism and friendship of peoples.

Both economic development generally and agricultural development in particular have been proceeding apace in such republics as Georgia, Armenia, and Azerbaijan. Formerly poverty-ridden Byelorussia has flourished within the Soviet Union. Moldavia has become one of the country's leading agricultural regions, a major fruit-growing and wine-making centre, and the economies of such republics as the Ukraine, Lithuania, Latvia, and Estonia have taken a big step forward. While the average volume of agricultural production over the Soviet Union increased by almost 250 per cent during the years of Soviet power, in the republics of Central Asia the gross output increased five to eight times. Even in the republics of the Baltic region (Lithuania, Latvia, and Estonia), which were not backward in this respect even before the Revolution, agricultural output has increased by 140 to 170 per cent. As for the vast territory of the Russian Federation, which itself includes 16 autonomous republics, five autonomous regions, and ten national areas, its agricultural output has increased by 220 per cent.

The social progress of the countryside in Central Asian republics deserves particular attention. It has already been noted that the Soviet government viewed the development of these republics as a major policy objective. Already in 1920 in a conversation with representatives of Turkestan, Lenin said: "We must make Turkestan into a model cultural socialist state, which ought to demonstrate to the enslaved nations and nationalities of that region the difference between tsarist and Soviet power. Thereby Soviet Turkestan will become a centre of attraction and a visual example for the neighbouring nationalities enthralled by the imperialists."¹

Socialism has fundamentally transformed the social status and labour, as well as the entire lives of the Uzbek people. Formerly destitute, poverty-stricken peasants, who

¹ *Pravda*, April 22, 1927.

were deprived of all rights, have become genuine masters of their land. Uzbekistan is now covered by a dense network of irrigation canals. Their average length is almost 200 thousand kilometres. Very large water reservoirs have been constructed, whose total capacity is 4,000 million cubic metres, and water, according to an Uzbek saying, is life. Millions of hectares of formerly barren desert lands were converted into flourishing oases. The republic's current irrigation and land improvement system surpasses those of any capitalist country where agriculture is based on irrigation.

The assimilation of Uzbekistan's so-called Hungry Steppe has been a glorious page in the chronicle of friendship among the Soviet peoples. The solution of a complex problem—the conversion of a desert that had lacked water and life into fertile fields—resulted from joint efforts of the Uzbek people and of workers in other Soviet republics who supplied building materials and powerful equipment. Now a new highly productive agricultural area of approximately half a million hectares has appeared with endless cotton fields, orchards, and vineyards as well as towns and comfortable rural communities. The name of Hungry Steppe alone continues to remind one of its recent past. Similar transformations have taken place in the steppes of the Central Fergana region, and in the lowlands of the Amu Darya and Kashka Darya.

Kirghizia was one of tsarist Russia's most backward outlying areas. The land and water use reforms that were carried out during the years of Soviet power and the collectivisation of the countryside have freed it from exploiting classes. The transfer of Kirghizia's nomadic cattle-breeders to a settled form of life, a task of supreme difficulty, was carried out successfully. Before the Revolution the hoe and the sickle had been the Kirghizian farmer's principal tools. Today Kirghizia's agriculture is based on modern equipment that includes more than 25 thousand tractors, 8 thousand harvester combines, more

than 16 thousand lorries, and numerous other machines. The capacity of all engines employed in Kirghizia's rural communities is 20 times that which was available to rural communities in all of pre-revolutionary Russia. The area of irrigated lands approaches a million hectares. Agricultural output has become less dependent on the uncertainties of weather conditions. Animal husbandry constitutes the republic's leading agricultural branch and ranks third in the production of wool in the USSR.

The example of Turkmenia fully refutes the assertions of colonisers to the effect that the East is destined to remain backward and that it is not within the power of man to bring about changes here. As a result of the large-scale land improvement work more than 97 per cent of the republic's cultivated lands are irrigated today. It ranks second in the country in cotton harvest, and supplies nearly a third of its fine-fibre cotton. Its collective and state farms possess a wide assortment of agricultural machinery, and received nearly 3.9 thousand tractors in 1974 alone to say nothing of other machines as well as a large volume of fertilisers. The Karakum Canal is a symbol of the creative might of the emancipated Turkmen people. The entire country participated in its construction. Collective and state farm fields and orchards now spread along its banks and produce increasing quantities of cotton, fruit, and other agricultural products.

Tajikistan's agriculture is acquiring an increasingly industrial character. Former deserts have been transformed into fields and orchards, and plants are being grown practically throughout the year. The Tajik collective and state farms have learned how to obtain two and even three harvests a year from a given field. Their newly reborn land now yields good harvests of grass, leguminous crop and vegetables even during the winter. For many years the republic ranks first in the country in terms of its cotton yield, which is approximately 3.3 tons per hectare, of which a third is of the more valuable fine-fibre brands.

The path of development that the Soviet Union has trodden confirms the validity of Lenin's views concerning the advantages that big centralised farms provide by comparison with individual farms. By combining the economic possibilities and resources of all Union republics it has been possible to accelerate the development of each. A country-wide management and planning has made it possible to ensure a rational territorial location of productive forces as well as to increase possibilities for economic manoeuvring and to apply more comprehensively the principle of specialisation and co-operation among Union republics in accordance with local natural and climatic conditions.

12. FROM MANUAL TO INDUSTRIALISED LABOUR

While the social progress of Soviet rural communities has been substantial, many unsolved problems continue to remain. In particular, socio-economic differences between town and country have not yet been fully overcome. There is no doubt that this will be achieved by those productive forces that are available to agriculture and above all by the agricultural producers themselves. For labour is the source of all wealth. Yet labour, too, may take different forms, and there is a lot of difference between a peasant hoeing his field from dawn to dusk, a farmer with a horse-drawn plough, and a farmer operating a tractor. The final results of similar inputs of labour will be vastly different in each case, and in our age only labour equipped with modern technology is generally effective.

The task of changing from the peasant horse to tractors was set by Lenin. It was, in effect, fulfilled a few years after the Second World War. In 1950 draught animals constituted only about 7 per cent of all power sources used in Soviet villages. The current stage of both Soviet agricultural and overall economic development is characterised by

the vastness of scale of corresponding activities. Today the country's industrial sectors produce a larger output each month than they did during the entire year in 1940, and the economic potential of the USSR has more than doubled during the past 10-15 years. The Soviet Union now disposes of all the means that are needed for a still more rapid rate of agricultural development and for its technical re-equipment on the basis of the latest achievements of the revolution in science and technology, while the villages' socialist structure provides wide opportunities for transforming agricultural labour into a variety of industrialised labour.

The most characteristic features of the current stage of agricultural industrialisation include the following:

- a shift of major production processes to an industrialised basis in which comprehensive forms of mechanisation and electrification, application of chemicals, and land improvement are widely practised;
- a specialisation of farms and of their subdivisions and a development of various forms of inter-farm co-operation;
- the establishment of networks of large state enterprises of the industrialised type for producing livestock products, vegetables, and fruit;
- the development of co-operation between farms and industries in rural communities at the level of individual enterprises, production associations, districts and of the overall economy;
- the training and retraining of managerial personnel and agricultural specialists in order to teach them new methods of work, which are needed for that sector's industrialisation and development of relations with industrial sectors.

The basis of any technical transformation includes changes in power facilities and the replacement of obsolete instruments of production by tractors, harvester combines, and lorries. Deliveries of this machinery to villages have sharply increased since 1965, as has their supply by

electricity. As a result, the energy input in agriculture increased from 231.7 million hp in 1965 to 457.4 million hp in 1975. During that time the energy-per-worker ratio on collective and state farms grew from 7.7 hp to 16.8 hp. Mechanical sources of energy now account for more than 99 per cent of energy input, the rest being supplied by draught animals.

More and more equipment of better assortment and quality has been poured into rural communities in recent years. Pick-up balers, sprinkling installations, milking apparatus, and plant protection chemicals have all gone into mass production, and deliveries of equipment required for a comprehensive mechanisation of agricultural processes have begun on a scientific basis. By the end of 1975 approximately 45 per cent of the cattle and more than 60 per cent of the pigs and poultry was kept on farms with a comprehensive mechanisation of all production processes. At that time the energy input in agriculture increased by 50 per cent as compared with 1970. Similarly, while 222 types of agricultural machines were delivered to rural communities in 1950, this figure reached 380 in 1965, 724 in 1970, and approximately 1,500 in late 1975. The possibility of both substantially increasing the number of types of equipment being supplied to agriculture and of effecting radical improvements in their quality is currently being considered. Nearly all tractor and harvester factories in the country are being reconstructed in order to improve the quality and capacity of the machines that they produce. A new generation of agricultural equipment is thus being born.

Industrial sectors have steeply raised their supplies of both electrical energy and electrical equipment to collective farms. Between 1965 and 1975 the general level of consumption of electrical energy by agriculture rose by 3.5 times as the number of electrical motors on collective and state farms grew by over 4.3 times. Today electricity is widely applied in all spheres of activity, and is available

in nearly all collective farm homes. Nineteen industrial plants producing electrical equipment for agricultural uses have been either constructed or fully renovated during the past five years, while in the next few years collective and state farms will be linked to the government's centralised sources of electrical energy.

Similarly, aviation services are playing an increasing role in agriculture. Specialised aircraft currently operate over 86.6 million hectares of cultivated land as they spread fertilisers and insecticides over fields, orchards, and vineyards. In terms of the scale on which aviation services are applied in agriculture, the USSR occupies the leading position in the world. Already today aviation accounts for one-half of all activities relating to the use of chemical plant protection, 65 per cent of those activities relating to the use of herbicides, and nearly 100 per cent of activities relating to the defoliation of cotton plants. Few collective and state farms today do not rely on such services in their work. The services of aviation also play an important role in delivering freight to agricultural users and in transporting their output.

The use of chemicals constitutes another important component element of technical progress in agriculture. Between 1965 and 1975 the output of mineral fertilisers (in conventional units) rose by nearly three times. In terms of mineral fertiliser output as well as of yearly growth in the corresponding production capacities, the Soviet Union now leads the world, having recently outstripped the United States. Some 90 million tons of mineral fertilisers were produced in the USSR in 1975, and increasing attention is given to their quality. In particular, the relative share of concentrated and complex mineral fertilisers climbed from 62 per cent in 1970 to 80 per cent in 1975, while the average content of their nutrient elements grew from 29 per cent to 37 per cent.

Much importance is attached to the greater use of lime to neutralise acidic soils and of gypsum in the case of

saline soils. These operations are important in raising the effectiveness of fertilisers and of general land improvement activities. Work of this type was carried out on 2.9 million hectares in 1965, and on seven million hectares in late 1975. Similarly, deliveries of plant protection chemicals increased by 50 per cent between 1970 and 1975, and during that time their quality and diversity improved.

The means of automation that are being introduced on a growing scale include automatic irrigation systems and automatic devices for controlling the speed of tractors and the load of harvesters and for stabilising their vertical position. Automatic steering devices for operating tractors are also in use that make it possible for one person to guide the work of three or four tractors in ploughing operations. Automatic devices are used for regulating the microclimate of animal farms, the mode of operation of grain-drying equipment, and the composition of feed mixtures. While these are only the first steps of automation, it should be recalled that tractors themselves first appeared only about 50 years ago. A specialised sector of industry is currently being organised in the USSR in order to produce various types of automated machine systems for agriculture. In particular, this concerns animal farming.

The current stage of the industrialisation of agriculture is characterised by a systems approach to the application of various factors. The government's agricultural policy is now based on a recognition of the principle that there is no one single simple and inexpensive path for increasing the effectiveness of agricultural production. In particular, the use of fertilisers in agriculture will be most effective when it is accompanied by corresponding irrigation activities as well as by the use of new strains that are responsive to water and fertilisers and the introduction of new equipment for spreading fertilisers and for harvesting crops possessing a high yield. Similarly, when a new and more powerful tractor is introduced it must be equipped with more effective implements for working the land. A recog-

nition of the complementarity of factors leading to the industrialisation of agriculture is now increasingly embodied in planning practice.

Both the specialisation of individual farms in particular types of production and inter-farm co-operation among state and collective farms occupy an important position among other socio-economic and organisational measures that relate to the industrialisation of agriculture. While it is true that agricultural enterprises in the USSR were organised as large-scale social economies from the very first, most of them have been traditional producers in five to ten or more sectors of agriculture. This is explained by the role of traditional production methods, the need to provide food for the farm's own workers, and the extensive character of farm operations. The advent of fundamental technical changes in production processes, however, and the shift of agricultural production to intensive techniques have created a need for substantial changes in the organisational structure of Soviet agriculture and for increasing both its specialisation and its concentration. Such a course permits a more effective use of the achievements of science and technology and represents a highway, as it were, to the objective of agricultural development.

But specialisation also creates a need for organising inter-farm relations. Above all, specialised production processes cannot develop without stable access to means of labour, fodder, and seeds, without arrangements for the timely marketing of its own products and without reliable food supplies for local workers. Secondly, even such large enterprises as collective and state farms may not have access to the full range of labour and material resources that modern types of specialised production require. This calls for establishing appropriate forms of inter-farm co-operation since tasks that lie beyond the reach of a single farm may then become fully realisable. By pooling resources it is possible to set up joint—large and specialised—enterprises of the industrial type. Such

a tendency is asserting itself within all sectors of agriculture and in all of the country's regions.

A decision of the CC CPSU "On Further Specialisation and Concentration of Agricultural Production on the Basis of Inter-Farm Co-operation and Agro-Industrial Integration", published in June 1976, described the conversion of farming to modern industrial methods as the main trend in agriculture and a new stage in Lenin's co-operative plan under developed socialism. During the collectivisation period, small individual peasant farms pooled their resources, amounting to primitive tools and implements, whereas the present process of concentration consists in pooling the efforts of collective and state farms to form large-scale highly productive industrial-type enterprises assuring more thorough specialisation and shaping new kinds of inter-sectoral ties.

This further specialisation and concentration of farming on the basis of inter-farm co-operation and agro-industrial integration reposes on the same time-tested basic principles of socialist development in agriculture, namely:

- free will in co-operation among collective farms, state farms, and other enterprises;
- scientific approach to the choice of specific organisational forms suiting local conditions;
- economic independence of the collective farms, state farms and other enterprises associated in inter-farm and agro-industrial enterprises;
- material interest of farms, and also of collective farmers, state farm workers, and workers of other enterprises in raising the efficiency of social production;
- democratic management of production.

The CC CPSU decision stresses that specialisation and concentration on the basis of inter-farm co-operation and agro-industrial integration is not a temporary objective, but a process impelled by the rising level of the productive forces and oriented on the long term. Its rate will largely

depend on how purposefully and effectively the collective and state farms use their own resources and state investments.

A number of different types of inter-farm enterprises and associations already exist in the USSR today. Inter-farm associations arise in relation to individual types of activities (animal farms of the industrialised type, feeding stations, centres of artificial insemination, nurseries), the industrial processing of agricultural produce (canning factories and shops, mixed feed enterprises), and the organisation of productive services and general services (construction, transportation, road construction, repair enterprises, associations for activities in the fields of mechanisation, electrification, land improvement, and social and cultural services).

The financial resources of inter-farm associations derive from shared contribution by individual collective and state farms or else from current profits and government loans. Their governing bodies consist of meetings of representatives delegated by each of the participating farms. These usually take place at least twice a year. They define joint programmes of activities, redistribute incomes, and elect members of the joint executive body. Production and managerial activities are governed by the principle of self-financing. The large-scale mechanised animal farms that are created in this manner are able to repay for their cost of development more rapidly. They also present more opportunities for a rational form of organising labour. Beyond this losses are reduced, working conditions are improved, production processes are more rapid, and the introduction of scientific and technical innovations is more effective. Associations of this type have been developing rapidly in the mechanisations of individual tasks and in land improvement activities as well as in the initial processing of agricultural produce. Inter-farm enterprises, producing such fully processed products as sausages, frozen fruit and vegetables, refrigerated meat and broilers, have

already been established in a number of regions and this will undoubtedly, develop further.

Inter-farm co-operation has become especially widespread in such areas of the Russian Federation as the Belgorod, Lipetsk, and Penza regions, in Byelorussia and the Ukraine, and especially in the Moldavian Republic, where there were 305 specialised inter-farm enterprises and associations in 1973 that produced nearly 30 per cent of the republic's collective farm output. In that republic almost all sectors of agriculture are encompassed by inter-farm co-operation, which accounts for nearly all capital construction activities in rural communities, over two-thirds of the output of meat and eggs, and for all planning and restructuring activities pertaining to fruit orchards and berry plantations. A number of inter-farm associations, which are responsible for the management of inter-farm enterprises, are now represented in the Republic's Collective Farm Council (since 1973) as one of its special subdivisions. Experience has confirmed the economic effectiveness of such forms of co-operation among specialised farms. The labour productivity of such associations is usually higher, equipment and fertilisers are used more effectively, and the cost of production is reduced.

The consequences of inter-farm co-operation are particularly revolutionary in the case of orchards. In Moldavia, for example, 22 fruit-growing associations will replace 3.5 thousand small-scale orchards located in different parts of the republic. The concentration of fruit growing on the basis of a fundamental renewal of techniques will reduce the required land area by a factor of two, while simultaneously increasing fruit harvests by approximately 2.5 times. The Pamyat Ilyichu orchard which was established in that republic's Slobodzeya District in 1970 has a total area of 4.5 thousand hectares. More generally, industrial-type animal farming associations, inter-farm enterprises for mechanisation and irrigation services, district-wide associa-

tions for crop rotation as well as for the development of improved orchards and vineyards, of greenhouse complexes and of inter-farm feed-producing enterprises are beginning to develop throughout the country.

The Soviet government, too, is undertaking similar activities. State-operated networks of large-scale animal-raising enterprises of the industrialised type are being developed throughout the country. Between 1971 and 1974 the government invested 1,672 million rubles in the corresponding construction activities. Today 103 such enterprises are operating, including 25 in the production of pork, 23 in the production of beef, and 55 in the production of dairy products. They include eight very large enterprises at which 108,000 pigs are fattened each year, five enterprises at which 10,000 head of cattle are fattened, one feeding station with a capacity of 20,000 animals, and a dairy farm for 2,000 cows.

Such enterprises will serve as model projects in the industrialised organisation of collective and state farm production. Their experience has already confirmed the advantages of such an industrialised approach. During the first six months of 1974, for example, such industrialised pork-producing enterprises as the Ilyinogorsky, Kuznetsovsky and Gubkinsky state farms were able to record an average daily weight gain of 515-646 grams. Their labour expenditures per centner of gained weight were 2.2-3.3 man-hours. Similarly, the Voronovo, Pashsky, and Bratsky state farms, which specialise in the production of beef, have recorded an average daily weight gain of 972-1,036 grams.

A dairy complex containing 2,000 cows under a single roof has been established near the village of Shchapovo in Moscow Region. Boxes containing 47 specially selected cows each are located on both sides of its central corridor. All 2,000 animals are serviced by three shifts of only 13 workers each.

Some 150,000 pigs are fattened each year in the Novy

Svet complex enterprise, which is located in Leningrad Region. Both feeding and watering operations as well as the removal of manure are fully mechanised, and automatic devices maintain a steady microclimate. Expenditures per centner of gained weight are only a half of those in the standard mechanised pigsty.

A country-wide system of specialised poultry farms called Ptitseprom exists in the USSR that encompasses nearly 2,000 enterprises, including 500 poultry factories and hundreds of poultry state farms, breeding stations and incubators as well as research centres and experimental stations. 4,000 million rubles have been invested in state-managed industrialised poultry-raising activities during the past eight years. This increased the production of eggs within that system by nearly five times, and that of poultry nearly four times. Ptitseprom farms now produce nearly 30 per cent of all eggs and 22 per cent of all poultry in the country. The productivity of poultry on these farms is nearly 40 per cent greater than elsewhere, while labour expenditures and feed requirements are nearly half as large.

Other types of agricultural production enterprises of the industrialised type have also been developing over the past few years. By the end of 1975, newly built large greenhouses, possessing a high level of mechanisation and of automation, totalled an area of more than 1,100 hectares. Similarly, storage facilities with automatic temperature and humidity controlling devices for fruit, potatoes, and other vegetables are being built on a large scale.

In the socialist environment the social and economic effects of specialisation and concentration in farming are entirely different from those under capitalism. In capitalist society they tend to augment crisis phenomena in agriculture with large corporations coming to the fore and spelling ruin for millions of small and medium-sized farmers. In socialist agriculture, on the other hand, specialisation and concentration are an organised process

oriented according to plan on expediting the growth of the productive forces and thereby on raising the living standard of the people.

Scientific and technological progress coupled with the establishment of large specialised agricultural enterprises and associations is paving the way for the further development of agro-industrial integration, an organic fusion of farming and industry, and for the growth of a far-flung network of agro-industrial enterprises and associations across the country. These structural forms of production are, indeed, the future of agriculture.

The first Soviet attempts at forming agro-industrial enterprises and associations date back to the late 1920s. But at that time they did not prove effective due to the poor material and technical resources in farming and food industry. It is not until the present stage, with the current industrialisation of farming, that objective conditions have come to hand for various types of agro-industrial complexes to be formed.

There were 56 agro-industrial associations and 512 agro-industrial enterprises in Soviet agriculture on January 1, 1975. Their average annual work force totalled 760,300. Their basic assets and funds were valued at over 6,000 million rubles, and annual revenue from processed products at 2,113.1 million rubles. They were mainly active in the growing and processing of vegetables, fruit, and oil-bearing and certain other crops. In 1976 more than 80 agro-industrial associations were active in the food industry.

In this context, an agro-industrial enterprise implies combined, organically associated agricultural and industrial production with crop cultivation, processing, storage, and in many cases also marketing, coming into the framework of one integrated production unit. An agro-industrial enterprise has one management, one balance sheet, and is one legal person. The state farm-factory form is the most widespread.

An agro-industrial association is a type of productive

organisation in which several juridically independent enterprises join efforts on the basis of rational specialisation and co-operation to co-ordinate the development of output, processing, storage, and marketing of products obtained from agricultural raw materials. Agro-industrial association implies gradual centralisation of certain economic functions, such as distribution of capital investments and of assets, and establishment of integrated transport, marketing, supply, and other services. It is managed either by a specially formed apparatus or by the apparatus of the head enterprise. By degree of integration, the association may be either a large territorial specialised unit (e.g., the all-Union poultry-farming association Ptitseprom, the republican association of the vegetable-growers of Moldavia Moldovoshchprom, a territorial or regional association like Dagvino—Daghestan Wine) or an inter-farm association with the individual farms as shareholders (e.g., inter-farm associations for processing farm products, making mixed feed, and the like).

An agro-industrial association is stimulating efficiency, specialisation and concentration of production, and eliminating excess links along the road from producer to consumer. Take the agro-industrial association for the growing, processing and marketing of fruit and vegetables formed in the Checheno-Ingush Republic (Northern Caucasus) in 1969. It comprises nine state farms, three processing plants, and a marketing unit in the town of Grozny. Its area under vegetables almost doubled in five years (1970-1975), and the share of vegetables, fruit, and berries in the association's marketable output exceeds 85 per cent, with 47 per cent for vegetables alone. Sales of vegetables and fruit rose 150 per cent. Losses declined visibly. And apart from improving production indicators, the single system of management and elimination of intermediate functions enabled the association to reduce management and office expenditure by nearly 25 per cent. The conversion to direct delivery from field or orchard to shop or

factory has released 75 employees formerly engaged in forwarding and delivery and in wholesale procurement and purchasing. Furthermore, management itself has become more expeditious and meaningful, assuring better concentration of investments, and centralisation of some of the ancillary functions, such as transport, chemicalisation, repairs, and the like.

Because of the far-reaching qualitative transformations that are taking place in the material and technical infrastructure of agriculture the problem of managing that sector is acquiring new dimensions. Increasingly, large-scale mechanised collective and state farms resemble contemporary industrial enterprises. In most cases this is achieved by their constructing plants and shops concerned with processing agricultural produce. In the case of Rovno Region's Zarya Kommunizma Collective Farm, for example, a cannery has been constructed, whose equipment and capacity makes it a fully modern industrial enterprise. Each season its production lines are able to turn out ten million cans of cucumbers, green peas, and fruit juices, and a large demand for its products has developed. A plant for the production of mixed feeds is also going up, while a shop for making hay flour is already in operation. As both agricultural and industrial production develop simultaneously, the collective farm's production losses decline and its income as well as that of its members increases.

The relative weight of such production and processing agro-industrial enterprises is already rather high in a number of regions. More than one-half of the grapes that are being processed in the country, for example, are being processed by grape-raising farms that possess wine-making plants. Beyond this agro-industrial co-operation is taking place at the level of larger organisational units, other than individual enterprises. This may result in the formation of agro-industrial associations at district, regional and even republican levels, which may include agro-industrial enter-

prises as well as independent plants and state and collective farms engaged in producing or processing specific types of products. In particular, a Kolkhozhivprom republican association has been established in Moldavia. It encompasses more than 160 modern self-financing enterprises and organisations concerned with the production of animal products.

Such an industrialisation of agriculture implies a larger function for materialised labour. This increases energy and assets input available per worker. It also brings about fundamental changes in techniques and in the organisation of production on collective farms. The equipment that is now available in a number of agricultural sectors has already made it possible to replace manual labour with machines. In particular, this is true of poultry factories, mechanised livestock complexes, and enterprises producing mixed feeds. Mechanised labour gave rise to a large demand for such new professions as tractor drivers, combine operators, mechanics, lorry drivers, persons trained for industrialised animal-fattening operations, and operators of milking machines. Their labour is as skilled and as productive as that of urban workers. Likewise, they have no less power to consume and equipment to use.

Substantial changes in the composition of agricultural workers are taking place as a result of integrated approaches to mechanisation. A growing professional division of labour has produced a decline in the relative share of farmers who do not possess a clearly defined profession from two-thirds to one-half over the past ten years. Nearly 13 per cent of all agricultural workers are now skilled operators of agricultural machines, with 80 per cent of them having acquired skills in one or more additional types of operation. In effect they represent an altogether new type of agricultural worker who is engaged in the productive activities of one and the same farm throughout the year despite the seasonal character of agricultural production.

A five-day working week has been introduced on more than 5,000 state farms as well as on many a thousand collective farms, particularly in animal husbandry. In this respect the working conditions of agricultural workers are, therefore, becoming increasingly similar to those of industrial workers. As in industry, too, the work of collective farmers is governed by specific quotas and rates of payment. In several republics both the rank-and-file collective farmers and machine operators acquire a formal professional status that corresponds to their particular skills and experience. This is true, for example, of Volgograd Region's V. I. Lenin Collective Farm, which is located in Rudnya District, and where a set of "Regulations on Increasing the General Educational Level and Labour Skills of Collective Farm Members" has been in operation during the past several years. In particular, premium payments of 5-10 per cent of basic earnings are given to persons whose work has been consistently excellent over a prolonged period of time, or who have acquired extensive knowledge or experience. In addition to production plans many collective farms throughout the country have drawn up plans for social development. Their principal objective is to transform agricultural labour into a form of industrialised labour, and also to overcome the differences between urban and rural workers that continue to exist in the level of skills and in the organisation of labour and payment.

Measures that increase the level of skills of personnel working in agriculture are currently being given particular attention by the Soviet government. There are 153 technical colleges in the country at the present time, and also 80 institutions of higher learning where agricultural specialists are being trained and where special divisions and faculties have been established for increasing the knowledge and skills of collective and state farm managers. In addition, 270 schools have been established at experimental stations and other scientific institutions for training specialists already possessing a specialised second-

dary education. In 1965 alone 934 thousand agricultural managers and specialists did advanced training courses.

In 1974 an advanced school of agricultural management was established within the framework of the K. A. Timiryazev Agricultural Academy, which is located in Moscow. It adds to the knowledge and skills of responsible officials of agricultural ministries, agencies, and territorial and regional administrations and associations. Lenin emphasised that "management necessarily implies competency, that a knowledge of all the conditions of production down to the last detail and of the latest technology of your branch of production is required; you must have had a certain scientific training".¹

Aside from the retraining and advanced training of senior personnel, the government is also engaged in a comprehensive and large-scale programme for training persons in various agricultural jobs of mass demand. Each year more than half a million skilled workers graduate from the country's network of agricultural vocational training centres. A special decision of the government has provided for the construction of hundreds of such centres between 1976 and 1980 and for the expansion of existing ones. Technical progress in agriculture and its industrialisation can only be successful if the persons who are carrying it out will have kept up with the latest developments in science and technology and the know-how that this requires.

The process of transition of agriculture to an industrialised basis is, of course, not limited to socialist countries. It is taking place in the developed capitalist countries as well. Its socio-economic consequences in such countries, however, reflect the negative influence of capitalist production relations. The economic literature of these countries now contains such new terms as "agricultural industries", "integrated agriculture", and "agro-business". While the

¹ V. I. Lenin, *Collected Works*, Vol. 30, p. 428.

precise content of each of these terms differs, each of them reflects a process of agricultural restructuring and integration with the economy's industrial sectors.

Monopolistic industrial firms producing farm machinery are interested in agriculture as a market for their products, while the food and light industries and also commercial firms view it as a permanently operating source of standardised primary products. Under such conditions monopolies seek to exploit labour in agriculture not only through such traditional direct methods as maximal increases in prices for means of production and reductions in wholesale prices for agricultural produce, but also by employing new state-monopoly methods of economic regulation. These include contractual forms of dependence, the establishment of rigorous standards, the supply of a wide diversity of productive services, issue of loans, control through membership in vertically integrated structures, and government regulation. The post-war history of developed capitalist countries has shown that under such conditions a growing effectiveness of agriculture is highly advantageous to monopolies, since a greater share of the resulting incomes is then received by the monopolistic bourgeoisie rather than farmers or peasants.

Yet even the most modern organisational forms of monopoly capitalism do not represent a change in its essential nature that would make it "softer" or else "more just" in relation to farmers. Instead a trend towards a continuing dominance of monopolies over agriculture prevails. But at the same time traditional methods for robbing farmers are not forgotten. They include price scissors (of which there have been numerous examples in most countries since the Second World War), the exploitation of farmers through higher taxes and interest payments for credit, and still other traditional forms of acquiring the revenue that is produced by the farmers' labour activities.

Additionally, technological progress in agriculture and

the emergence of "agro-business" have led to monopoly capital regarding the new forms of its dominance over agriculture as increasingly important.

Of great importance among them are measures to ensure monopoly profits by organising production vertically from the manufacture of agricultural means of production and the output of farm produce to the marketing of processed agricultural goods.

The use of vertically integrated structures corresponds to the new level of development of productive forces in capitalist countries. The wide use of monopolistic forms of the "agro-business" type has brought about a replacement of traditional unregulated market linkages between farmers and the consumers of their products by direct contractual relations and a diversity of forms of vertical integration. Thus, market forms of monopoly domination over farmers are replaced by a direct subordination of farming households to the new comprehensive production systems on terms that are established by the monopolies. Yet in such a context, while it is somewhat reduced, the risk continues to be borne by the farmers themselves. Because they are in a commanding position, the monopolies regulate the terms of integration in such a way that farmers will bear the major burden of fluctuations in demand and supply at the level of retail trade for given external parameters of their activities. As a form of penetration of agriculture by monopolies "agro-business" intensifies the displacement of small-scale and medium-scale farmers from the land and initiates entirely new processes within which farmers that were once independent become dependent producers operating as a type of hired physical and managerial labour.

The dualistic nature of farmers (who are small capitalists, on the one hand, and are, on the other hand, workers employed by large monopolies and restricted in their possibilities for making decisions and who are fully dependent on them for their incomes) now assumes

a new form because of the farmers' transformation into partial employees within "agro-business". Within such a context such partial workers and the process that integrates them differ from standard industrial workers in the following respect: in addition to contributing their own physical labour into integrated technological processes, they also contribute their equipment and the land that they own together with their agricultural managerial skills and also the seasonal and permanent workers that they may themselves employ.

The industrialisation of agriculture and the displacement of live labour from production thus changes the character of hired labour. This is apparent if one views it within the context of an integrated firm of the "agro-business" type rather than in the narrow context of farming households. Today monopolies are no longer satisfied by finding ordinary workers on the labour market. Industrial production increasingly requires that these workers possess knowledge and skills in applying equipment, while in the case of agriculture it requires that this be complemented by contributions of their own "shares" in the form of equipment, land, and skills in managing modern production activities, even though they may be effected on a modest scale, in ways that meet the requirements of monopolies.

It is, therefore, not surprising that because of the low level of profitability of agricultural production large industrial monopolies frequently abstain from direct investment into such activities as the purchasing of farms and prefer to rely on a system of contracts that place farms in a subordinate position. They engage in agricultural production directly only in those cases when this is only dependent on land and when it lends itself readily to industrial methods of organisation, such as poultry farming, the fattening of cattle on commercial fodders, and the cultivation of vegetables in greenhouses. At the same time they are constantly seeking to extend

their activities to those economic sectors that adjoin agriculture and also to the sphere of productive services, in short, wherever it is possible to exploit farmers without participating directly in the organisation of agricultural production and in the risks that derive from its dependence on natural and climatic conditions.

13. SOVIET AGRICULTURE TOMORROW

In summing up the results, in evaluating the road passed by the Soviet peasantry from individual to collective farming it is important to stress that all their achievements have been made, above all, due to the alliance of the peasants with the working class, to Soviet power and to the socialist state. The triumph of the collective and state farm system, the elimination of the antithesis between town and country and the community of their interests have produced far-reaching qualitative changes in the nature of the peasantry themselves and in their way of life as well as in agricultural production.

Having built socialism Soviet farmers look forward confidently to the future. Lenin had written that Marxism helps "not only in the sense of explaining the past but also in the sense of a bold forecast of the future and of bold practical action for its achievement".¹ What then is the future of Soviet countryside, and how will agriculture appear in the USSR in, say, five, ten, or fifteen years? The country's system of planned social development makes it possible to answer these questions, and the outlines of the future of collective and state farms are already visible today.

Socialism is a planned economy. Nearly the entire economic history of the USSR may be surveyed in terms of its five-year plans of economic development. The year

¹ V. I. Lenin, *Collected Works*, Vol. 21, p. 72.

1975 was the terminal year of the Ninth Five-Year Plan and accordingly collective and state farms have already defined the new frontiers that they will seek to reach during the Tenth Five-Year Plan, between 1976 and 1980. While each Soviet five-year plan period represents an important landmark in the development of the collective and state farm system they are inseparable from one another. Speaking figuratively, they constitute chapters of a single great chronicle of socialism that describes the heroic labours of Soviet peasantry and of the entire Soviet people.

Guidelines for the Development of the National Economy of the USSR for 1976-1980 approved by the 25th Congress of the CPSU read: "The main task in agriculture is to ensure further growth and greater stability in farm output, the utmost possible improvement in the effectiveness of livestock and crop farming to satisfy the population's food requirements and industry's need for raw materials more fully, and to build up state reserves of agricultural produce."¹ In order to achieve this, the average annual output of agricultural products will be substantially increased (Table 13).

The General Secretary of the Central Committee of the CPSU, L. I. Brezhnev, has described the principal objectives of the new, Tenth Five-Year Plan as follows: "Proceeding from the general trends in our economic policy, it might perhaps be said that it should, above all, be a five-year plan of quality, a five-year plan of effectiveness in further promoting the people's well-being."² Both problems of quality and problems of efficiency of production as well as problems relating to the population's standard of living directly concern the development of agriculture.

¹ *Guidelines for the Development of the National Economy of the USSR for 1976-1980*, Moscow, 1976, p. 58.

² L. I. Brezhnev, *Following Lenin's Course*, Moscow, 1975, pp. 509-10.

Table 13
The Development of Agricultural Production in 1976-1980

	Average annual output in 1976-1980	Increase over level attained in 1971-1975	
		in absolute figures	per cent
Gross output of agriculture (thous million rubles)	104-106	13-15	14-17
grain (million tons)	215-220	33.5-38.5	18-21
sunflower seed (million tons)	7.6	1.6	27
sugar-beet (for factory processing, million tons)	95-98	19-22	25-29
raw cotton (million tons)	8.5	0.8	11
meat (slaughter weight, million tons)	15.0-15.6	0.9-1.5	7-11
milk (million tons)	94-96	6.5-8.5	7-10
eggs (thous million)	58-61	6.5-9.5	13-18

An emphasis on the qualitative aspects of agricultural development does not imply any reduction in the importance of its quantitative indicators. There is a continuing objective need for a further growth in the volume of output of food and raw materials both during the tenth five-year period and during subsequent five-year periods. The country no longer needs just any kind of produce, however, but rather high-quality produce that is able to meet the increased requirements of members of a socialist society. Improvements in the quality of output, moreover, are closely associated with possibilities for increasing their quantity.

A 1 per cent increase in the sugar content of sugar-beet, for example, would make it possible to produce an additional 60,000 tons of sugar per year on those lands on which sugar-beet is currently grown. This is equivalent to expanding the area under cultivation by 230,000 hectares. Similarly, a 1 per cent increase in solid matters in tomatoes would increase the output of tomato products by

approximately 20 per cent. Comparable effects may also be derived by increasing the starch content of potatoes, the oil content of sunflower seeds and of corresponding elements of flax, wheat, and other cultures. This points to the exceptional importance of improvements in the quality of agricultural products.

Accordingly, much emphasis is placed on the creation of incentives for improving the quality of agricultural products. Obsolete standards of quality are being revised and new ones introduced by the government as well as a new system of purchasing prices. Besides, great importance is attached to a dependence between the revenues of collective and state farms and the quality of their marketable output being established. Strong and hard wheat, for example, is divided into several grades in terms of its gluten content. The price of first-grade strong wheat whose gluten content is not less than 32 per cent has now been increased by 50 per cent, while that of second-grade wheat (not less than 28 per cent gluten content) has been increased by 30 per cent. Similarly, there are three grades of hard wheat and the corresponding price increases are 65, 40, and 20 per cent.

Agricultural activities that bear on the improvement of quality begin long before harvesting. In order to achieve high levels of quality day-to-day care is needed in the selection of varieties and breeds, in processing and preparing seeds, in carefully observing various technological rules and methods, and the performance of rapid and high-quality work when gathering harvests. The quality of output is markedly improved by appropriate applications of scientific and technological achievements. In such a context, the reference to the Tenth Five-Year Plan as a plan of quality and efficiency implies that increases in the output of grain will be met primarily from increases in yield, improvements in land fertility and increases in the general level of crop and livestock farming rather than from simply extending land under cultivation.

The 25th Congress of the CPSU has stated that at present the most important task of agriculture is to increase the production of grain. The Congress' decisions outline the principal ways of solving this problem, namely, increase in yield, further improvements in the structure of the areas under grain crops and effective use of fertilisers, extension of crops on improved lands, the use of high-quality varieties and hybrids and improvements in agrotechnics of grain cultivation. In view of this a number of specific measures has been planned. In particular, the proportion of hard and strong varieties of wheat, rye, buckwheat, millet, and rice within overall grain production is to be substantially increased, while the area under maize, barley, oats, and legumes is to be extended. In addition, the development of large zones of guaranteed production of marketable grain on improved land will proceed more rapidly and it is planned to fully complete the comprehensive mechanisation of grain cultivation.

With regard to cotton it is expected that land under cultivation will be extended and that the yield of long-staple varieties of cotton will be increased. Union republics that specialise in cotton production will complete their programmes for introducing cotton-alfalfa crop rotation and will also carry out measures to introduce the cultivation of high-yield and high-quality fibre varieties of cotton that are resistant to disease.

Increases in the production of sugar-beet will be achieved through substantial increases in its yield and sugar content. In this connection the further concentration of sugar-beet production in the most suitable regions will be important. This refers to such areas as the irrigated lands of the Volga area, the Northern Caucasus, the south of the Ukraine, and Moldavia. It has also been decided that the complex mechanisation of this sector, which is particularly labour-consuming, will, in the main, be completed, and that its needs for fertilisers and chemical pesticides will be fully met.

Important shifts will also take place in the output of potatoes and vegetables. Their variety will increase and their quality will improve. The creation of irrigated zones guaranteeing vegetable and early potato supplies for residents of cities and industrial centres will be completed. The productive capacities of the growing network of greenhouse complexes will increase and there will be substantial increases in the output of fruits, berries and similar products, and their quality will improve.

In animal husbandry increase in the production of meat, milk, eggs, wool, and other products will be achieved through increased productivity of cattle and poultry, larger herds, a more effective use of fodder, improved pedigree breeding, greater mechanisation, and the use of progressive techniques. The specialisation and concentration of production and a gradual transition of animal husbandry to an industrial basis will play an important role.

Specific measures approved by the 25th Party Congress will make it possible to achieve higher yields of crops and an increase in the productivity of cattle and they also open new potentialities for further progress in this area. Above all they include an increase in capital investments in agricultural development. More specifically, 171,700 million rubles will be set aside for that purpose in the years 1976-1980, or more than 25 per cent of the country's total investments. That sum, moreover, does not include capital expenditures on the development of farm machinery, production of mineral fertilisers, and on other related sectors. For purposes of comparison let us recall that agriculture has received 320,000 million rubles during the years of Soviet power. It will thus receive much more than half of that amount during the next five years.

Collective and state farms will receive a large volume of new machinery (Table 14).

Industries will increase their output of tractors possessing both higher working speeds and capacities and provided with a full complement of farm implements. As a

Table 14
Deliveries of Agricultural Machinery in 1976-1980

	Volume of deliveries 1976-1980	Growth in deliveries 1976-1980 (per cent)
Agricultural machinery (thous million rubles)	23	46
including machinery for animal husbandry and fodder production (thous million rubles)	10.3	54
Grain-harvesting combines (thous units)	538	20
Tractors (thous units)	1,900	12
Trucks (thous units)	1,350	23

result, power-per-worker ratio in agriculture will increase from 17 hp in 1975 to 28 hp in 1980. This will make it possible to come close to completing the comprehensive mechanisation of the grain production and sugar-beet growing, and to raise substantially the level of mechanisation in the cultivation and harvesting of other crops, and in livestock-breeding and the production of fodder. The power engineering is of utmost importance for the intensification of agricultural production. By the end of the Tenth Five-Year Plan the consumption of electricity in agriculture will have increased from 74,000 million kwh (in 1975) to 135,000 million kwh. This will almost double the power-per-worker ratio. Electricity is particularly important in the raising of crops on improved lands, where up to three kilowatts of energy may be needed per each hectare. The application of electricity will free a very large number of agricultural work force which are urgently needed in other sectors of the economy. Electrification is becoming the basis of many of agriculture's technological processes.

Increases in yield depend directly on the use of chemicals and on land improvement activities. The Tenth Five-

Year Plan envisages that collective and state farms will receive 467 million tons of fertiliser and nine million hectares of irrigated or drained lands. On the average each hectare of irrigated land increases agricultural production by four-five times, while drained land doubles it. A wide use of mineral fertilisers is also very important. It has been calculated that each kilogram of mineral fertilisers produces nearly two kilograms of grain. But, in addition, it has been estimated that in spite of the substantial improvements that they bring, mineral fertilisers compensate so far for only one-half of the nourishing ingredients that the soil transfers to crops. Similarly, in the production of a number of crops chemical herbicides are required by modern techniques. By contributing to the retention of nourishing ingredients within the soil they increase the yield of cotton by approximately 1.5 centners per hectare, that of sugar-beet by 20 centners, of rice by 7.5 centners, and of potatoes by 15 centners. An important role will be played by the agro-chemical services that are currently being organised on a country-wide basis for a rational use of fertiliser and pesticides.

Much will be done to improve the production of fodder. The production of mixed feeds in 1980 will be 80 million tons, by comparison with 45 million tons in 1975. Improved lands will be used for this purpose on a large scale. The cultivation of high-protein varieties will increase as will the productivity of natural hay fields.

Both the general further development and the comprehensive intensification of agriculture presuppose the effective use of growing investments, of basic and circulating assets, of the growing productivity of labour, and of declining costs of production as well as the prevention of all kinds of losses. The central task of the five-year plan that has been defined by the Party is to achieve on each hectare of land a rate of growth in output that will meet the growing needs of the population for food, clothing, and footwear produced from agricultural raw materials to the largest

possible extent. In such a context the reduction of costs per unit of output must be viewed as a leading requirement, whose significance increases further as the scale of production grows. At the present time lowering the costs of production by 1 per cent saves approximately 700 million rubles. This could produce an additional output of more than 12 million tons of grain or 3.3 million tons of milk.

Sharp increases in the efficiency of agricultural production require that new organisational forms of production be employed, and that major improvements be introduced in the managerial system. It has already been noted that the further development of specialisation and concentration of production based on inter-farm linkages and agro-industrial co-operation that results from the development represents a qualitatively new approach to this problem. These are, in fact, the developments that will provide the organisational and managerial conditions for applying industrial methods in agriculture, and they are largely associated with the problem of finding the best ways for managing collective and state farms. The structure that will be introduced for managing agriculture during the Tenth Five-Year Plan will have the following properties:

first, it will serve the implementation of a single state policy in relation to all agricultural problems, irrespective of the specific juridical chains of command that govern particular enterprises;

second, it will delineate more clearly the particular functions that will be assigned to various levels of management;

third, it will seek to combine organically centralised guidelines with autonomy and initiative on the part of enterprises;

fourth, it will remove unnecessary managerial links and will make management maximally effective; it will also bring management closer to production activities.

Measures that combine scientific and technical achievements with the advantages that are provided by the socialist system of management will receive particular emphasis. Science itself will increasingly become a direct productive force in agriculture, while research and production associations represent one of the most important forms through which science and production are merged. In a number of districts and republics effective examples of such organisational forms already exist. In Estonia, for instance, such an association was formed on the basis of its Institute of Crop Farming and Land Improvement. It groups 19 research divisions and 14 agricultural enterprises that jointly possess more than 60,000 hectares of land and 15,000 head of cattle. The Institute's experimental farms have served a base for the effective management of production. In addition, the association includes three state farms that serve as centres of technical training for farm specialists. A single association thus combines in an integrated manner research activities, the training of specialists, and effective agricultural production.

The comprehensive character of long-term plans today is one of their important features. They link closely both economic and social processes, and both growth in output and increases in its effectiveness, and improvements in the level of cultural and everyday life of villagers. Integrated plans of social development open prospects before the farm workers for developing production, for improving skills, and for raising the cultural and living standards. All of this, according to Lenin, makes it possible to carry the masses "forward with a clear and vivid perspective (entirely *scientific* at its foundations)".¹ This is precisely the aim of comprehensive social planning which relates existing concrete realities to tomorrow's prospects.

The first plan of social development was formulated in

¹ V. I. Lenin, *Collected Works*, Vol. 35, p. 435.

1968 in Tambov Region's Strana Sovietov Collective Farm. Today, however, many thousand collective and state farms have either prepared similar plans of socio-economic development over five, ten, or fifteen years, or else are in the process of doing this.

Within that region the following structure for such a plan was selected as particularly successful:

First section: growth in output, in its technical level, and in its effectiveness in changing the character of the farm workers' labour. Specific sub-sections are then concerned with basic indicators of the enterprise's further development, the mechanisation and automation of labour and production techniques, and improvements in the management of production.

Second section: the professional and general training of workers and increasing their skills.

Third section: the work activities of collective farm members, their daily life, and health protection. That section is concerned with planned measures for improving conditions of labour, providing health services, raising the standard of living, and organising facilities for rest and leisure.

Fourth section: the moulding of a new man. That section is concerned with matters of ideological and political education, with cultural education, education through work, and sports activities.

Fifth section: the improvement of social relations within the production collective.

Social planning is always specific. The structure of plans and the measures that they list are not standardised and do not belong to a single type. Collective and state farms of different districts and regions decide independently on matters relating to social plans. At the present time the practice of comprehensive socio-economic planning has spread to entire districts, regions, and republics. In principle, even the economic plan for 1976-1980 constitutes a comprehensive socio-economic programme for

the development of Soviet society. Throughout the country research centres participate actively at all levels in formulating these plans.

In Moldavia, for example, scientists of the republic's Academy of Sciences' Institute of Economics have prepared models of projects of socio-economic development. Such models have been prepared for a rural district, a collective farm, a state farm, and an agro-industrial enterprise. The corresponding designs have then made it possible for that republic's research workers to elaborate socio-economic plans for a number of districts, including the Novoaninsky District, and for their specific farms. The plan for a district's socio-economic development contains six sections:

1. The development of the district's economy as the basis for improving social relations.
2. Improvements in managerial practices.
3. Balanced change of the district's social structure.
4. Increasing the population's welfare.
5. Changes produced by architectural planning.
6. The communist education of working people and the development of social initiative.

A similar structure is also applied in drawing out plans of socio-economic development at the level of collective and state farms in Moldavia. That work is carried out by Social Planning Councils, which are headed by the farms' managers. Specialists, representatives of social organisations, and workers who have distinguished themselves in production participate in that work. For each section of the plan special questionnaires are first sent to farm workers and are then analysed. The resulting plans are first examined by the collective farm boards and the state farm administration and are then presented for discussion and approval to general meetings of these farms. Their general objective is to transform agricultural labour into a form of industrial labour and to eliminate differences

between town and country in the organisation of production and in ways of life.

The 25th Congress of the CPSU has noted that in terms of their principal goals the Ninth and Tenth Five-Year plans constitute a single whole. But the Communist Party is also looking still further ahead and is defining long-term landmarks for the country's development. This refers to the long-term orientation of the Party's economic policy. At the same time that a five-year plan was prepared for 1976-1980, initial targets of economic development up to 1990 were drawn out as well. Available data and calculations show that between 1976 and 1990 the country will have approximately twice as many material and financial resources at its disposal as during the preceding 15-year period. This creates new possibilities for solving the basic socio-economic tasks that have been set by the Party. And if one takes into consideration the fact that agriculture accounts for three-quarters of the people's total consumption fund, it becomes clear why an emphasis on agriculture has become one of the most important features of the USSR's long-term plans.

Such long-term economic plans are based on the need to meet the country's requirements for agricultural products fully. In this connection the rational norms of consumption that have been established through scientific research play a major role (Table 15).

While the present average diet in the USSR is sufficient in terms of its caloric content, it is less than optimal in terms of animal protein content. To make the diet of Soviet people more rational the overall volume of agricultural output must be increased by 2-2.5 times. This takes into consideration expected increases in population. At the same time the output of fodder grains and of meat must increase even more rapidly. Accordingly over the long term there will be progressive shifts in the structure of agriculture. All additional growth in agricultural output will derive from the further development of social produc-

Table 15

Actual Levels and Rational Norms of per Capita Consumption
of Basic Agricultural Products in the USSR

Products	Actual level of consumption, kg		Rational consumption norms, kg
	1965	1975	
Bread and bread products	156	149	120
Potatoes	142	120	97
Vegetables and melons	72	109	146
Sugar	34.2	43	36.5
Fruits	28	46	113
Meat and meat products	41	56	82
Milk and dairy products	251	320	434
Eggs	124	207	292

tion of collective and state farms that will be accompanied by a reduction in the share of output that is received from personal holdings. In the total output there will also be a substantial progressive tendency towards a larger share of raw materials for the food, mixed feeds, and light industries.

These problems can only be solved through a comprehensive programme for the industrialisation and chemicalisation of agriculture and for land improvement on the basis of accelerated development of large-scale specialised branches of industry that carry out aggregate deliveries of technical equipment, mineral fertilisers, and the equipment and materials that are required for land improvement.

In order that the comprehensive mechanisation of agriculture be completed, its energy capacities must be increased at an annual average rate of 8 per cent, while the capacity of electrical equipment in agriculture must grow even more rapidly. The average rate of growth of basic productive assets will be 6 per cent a year, and their qualitative characteristics will change considerably.

Expenditures of physical labour in agriculture will be reduced several-fold.

A long-term plan of land improvement has now been adopted for the period ending in 1985, and the measures that it lists are already being carried out throughout the entire country. The first leg of the Large Stavropol Canal was completed in 1968, while the second leg was completed in 1974. Its overall length is already 485 kilometres. Farms that are located in its vicinity will be able to irrigate tens of thousands of hectares of land and hundreds of thousands of hectares of meadow and pasture land. This will make it possible to obtain as much as 0.5 million tons of grain and more than a million tons of fodder for animal husbandry every year. The canal's third leg is under construction. The "highway of fertility", as that canal has been called, is proceeding further into the dry regions of the Stavropol Territory. Yet it represents only a part of the long-term plan of land improvement work, which also includes other projects that are no less grandiose, such as the draining of the lands inundated by the Kuban River and the irrigation of the Volga area's drought zone.

The programme for developing an entire enormous region of the Russian Federation, the so-called Non-Black Earth Zone, provides an excellent example of the comprehensive long-term planning. This refers to a densely populated part in the country's centre that includes 29 regions and autonomous republics of the Russian Federation. Its population is 58 million persons, or 44 per cent of the entire population of the Russian Federation and 22 per cent of the country's population. There are approximately 14,000 factories and plants in this industrially developed region that situates large industrial centres—Moscow, Leningrad, Gorky, Sverdlovsk, Tula, Ivanovo, Vladimir, Yaroslavl, and others.

This zone is also a specifically Russian agricultural region. Its natural conditions permit high and stable

harvests of grain, potatoes, vegetables, and flax, as well as the successful development of animal husbandry. Its size is enormous, and it possesses 52 million hectares of land under cultivation, that is, as much as France and Italy taken together, on which there are 5,500 collective farms and 4,300 state farms. It accounts for a third of the meat that is produced in the Russian Federation, more than half of its potatoes, 40 per cent of its milk and eggs, and nearly all of its flax.

Farmers of that zone have achieved important successes in recent years, especially in animal husbandry, and potato and vegetable growing, and their collective and state farms have gained in strength while the payment of their work has increased. This is true of all regions within that zone. In Moscow Region, for example, the gross output of collective and state farms per hectare of cultivated land has increased by more than 25 per cent during the last five years. Dozens of farms regularly obtain more than 40-50 centners of grain per hectare, including the Vladimir Ilyich Collective Farm and the Zarya Kommunizma and Klementyev state farms, as well as the Nemchinovka experimental farm. Similarly, in recent years farms located in that region have been obtaining an average of 3,131 kilograms of milk per cow per year. The substantial achievements of the zone's leading collective and state farms are explained by increased agricultural skills as well as a careful utilisation of each hectare of land and also by a comprehensive intensification of production.

Nevertheless, for the zone as a whole the rate of growth of agricultural production was clearly insufficient, and its very large potential is far from being fully used. In particular, the annual value of its gross agricultural output per 100 hectares of cultivated land was only one-half of the 1965-1973 average for other Union republics. The factors that explain this have developed over a prolonged period of time and include, among others, the weak material and technical infrastructure of collective and state farms in

that zone, the land's low natural fertility, the neglected state of land under fodder, the large number of very small villages, poor roads, and a shortage of trained personnel.

Meanwhile, the agricultural potential of that zone is enormous. This explains why the further development of agriculture in that zone has now become a major objective of the government. In fact an entire programme of measures has already been initiated since 1975, whose time period stretches to 1990. That programme represents an application of the systems approach to the problem, within which the relevant tasks and needs of industry and social and demographic processes are also taken into account.

Land improvement, which will be largely completed on all land under cultivation within that zone by 1990, plays a strategic role within that programme. By that time nineteen million hectares of land will have been drained, eight-ten million hectares of land for different crops will have been improved, and irrigation systems will operate on 2-2.5 million hectares. Some 1.8 million hectares of land will have been drained between 1976 and 1980 alone, and this will double the total area of drained land within the zone. Substantial areas of land under cultivation will be treated with gypsum, cleared of brushes and small forests, while minor irregularities in the land's contours will be levelled. The material and technical infrastructure of agriculture will be substantially strengthened, and the rate at which physical labour will be replaced by mechanised labour will be accelerated, while living conditions and the availability of cultural and everyday services to the population will be improved and road building extended.

The total capital investments of the government and the collective farms in that programme will amount to 35,000 million rubles during the Tenth Five-Year Plan alone. This is equivalent to the investments that were made during the past 15 years and is 80 per cent more than in 1971-1975,

Of that sum 27,000 million rubles will be channelled to consolidating the zone's productive assets. Collective and state farms in that zone will receive 120 million tons of mineral fertilisers, 380,000 tractors, 94,000 grain-harvesting combines, 230,000 trucks, and so on. The asset-per-worker ratio of collective and state farms per 100 hectares of ploughed land will more than double by 1980, the warehouses that are needed for mineral fertiliser storage will be built, and facilities supplied for its transportation and application. The agro-chemical centres will be established throughout the entire zone, funded jointly by the government, collective farms, state farms, and Soyuzselkhoztekhnika enterprises.

By 1990 the zone's agricultural output will increase by 2-2.5 times, while already in the tenth five-year period its average yield of grain will reach 20 centners per hectare, of potatoes—160 centners, of vegetables—up to 260 centners, and of flax fibres—up to 4.5 centners. The number of cows will increase by 1.8 million, or 35 per cent, while the average milk yields will be at least 2,800 kilograms.

In addition to a large-scale programme for developing agricultural production, major measures are provided for growth in the capacities of the light, food and other industries in the zone, for which approximately 8,000 million rubles of government allocations have been assigned for the period between 1976 and 1980. This is twice as much as during the ninth five-year period. The zone's meat and milk producing capacities will increase by 1.3 times during that period, refrigerator capacities by 1.4 times, the output of mixed feeds by 1.6 times, vegetable and fruit canning capacities by 1.7 times, and primary flax processing capacities by 1.8 times.

Road building will expand substantially. More specifically, nearly 13,000 kilometres of motor roads will be built during the tenth five-year period, and 12,200 kilometres of hard-surface roads within individual farms. Aside

from serving as an important factor in improving the farms' economic activities, this will contribute substantially to further social development of the countryside. The construction of roads will largely narrow the gap between the levels of cultural and everyday services of the rural and urban populations, and also create favourable conditions for persuading skilled personnel to remain in rural communities.

The development of social and general service facilities in the countryside is an integral part of the zone's comprehensive programme of agricultural development. More than 5,000 million rubles will be assigned to these objectives during the tenth five-year period. A large-scale programme has been designed for transforming existing villages into comfortable modern rural communities. To assist farmers in moving to these new residential centres from their current locations in small rural settlements the government is providing loans for a period of 15 years to finance the construction of residential houses and buildings. Of this sum 35 per cent will be repaid by the government itself. The total floor space in the zone between 1976 and 1980 will double.

During the next five years general education schools will also be constructed for 0.7 million pupils and pre-school institutions for 160,000 children. In addition, district cultural and community centres, and also collective and state farm community centres will be constructed for more than 410,000 persons. Rural shops and public catering enterprises will be expanded so as to provide services for another 700,000 people. The volume of general everyday services will increase sharply. The level of expenditures on the development of cultural facilities and everyday services per rural resident will more than double in relation to the corresponding average level for the country as a whole.

All these long-term plans are important components of the general long-term programme for the country's agri-

cultural and overall economic development up to 1990 that is being worked out. The country is firmly pursuing a course towards a comprehensive solution of economic, material and technical, and social problems of the countryside. The Communists of the socialist state are leading the Soviet people confidently towards building communism, which is the most humane and just society on earth.

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